

UNCLASSIFIED

AD NUMBER

AD877956

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

Distribution authorized to U.S. Gov't. agencies only; Administrative/Operational Use; 15 DEC 1970. Other requests shall be referred to Office of the Assistant Secretary of Defense, Installations and Logistics, Attn: OASD (I&L) SD, Wahington, DC 20301.

AUTHORITY

ASDRD per ltr, 20Jun 1974

THIS PAGE IS UNCLASSIFIED

✓

LOGISTIC SUPPORT IN THE VIETNAM ERA

2

AD877956

VOLUME I

A SUMMARY ASSESSMENT WITH MAJOR FINDINGS AND RECOMMENDATIONS

AD No. —
DDC FILE COPY

DDC
RECEIVED
DEC 28 1970
RECEIVED
A

of

A REPORT
BY THE JOINT LOGISTICS REVIEW BOARD



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

18 DEC 1970

SS

INSTALLATIONS AND LOGISTICS

MEMORANDUM FOR THE DIRECTOR, DEFENSE DOCUMENTATION CENTER

SUBJECT: Joint Logistics Review Board Report

It is requested that the attached three volumes, eighteen monographs and five classified appendixes, which comprise the subject report, be made available for distribution through your center to U.S. Government agencies. The following distribution statement is provided as required by Department of Defense Directive 5200.20 dated 24 September 1970, subject: "Distribution Statements on Technical Documents:"

DISTRIBUTION STATEMENT "B"

Distribution limited to U.S. Government agencies only; the report contains detailed staff advice, opinions and recommendations prepared for use by logistics managers; statement applied 15 December 1970. Other requests for this document must be referred to the Office of the Assistant Secretary of Defense (Installations and Logistics) ATTN: OASD (I&L) SD.

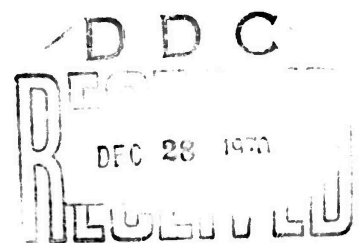
Enclosures (26)
As stated

PAUL H. RILEY
Deputy Assistant Secretary of Defense
(Supply, Maintenance & Services)

LOGISTIC SUPPORT IN THE VIETNAM ERA

VOLUME I

A SUMMARY ASSESSMENT WITH MAJOR FINDINGS AND RECOMMENDATIONS



STATEMENT IS UNCLASSIFIED

Each transmittal of this document to the U.S. Government must have prior approval of the

Office of the Asst Sec.
of Defense (Installation and Logistics)
Wash. D.C. 20301

A REPORT
BY THE JOINT LOGISTICS REVIEW BOARD

**"THOSE WHO CANNOT REMEMBER THE PAST
ARE CONDEMNED TO REPEAT IT"**

George Santayana

PREFACE

ORGANIZATION OF THE BOARD

On 17 February 1969, the Deputy Secretary of Defense established the Joint Logistics Review Board (JLRB) to "review worldwide logistic support to U.S. combat forces during the Vietnam era so as to identify strengths and weaknesses and make appropriate recommendations for improvement."¹ The Board consisted of:

Gen. Frank S. Besson, Jr., U.S. Army—Chairman

Lt. Gen. Frederick L. Wieseman, U.S. Marine Corps (Retired)

Lt. Gen. Lewis L. Mundell, U.S. Air Force

Vice Adm. Edwin B. Hooper, U.S. Navy

Lt. Gen. Oren E. Hurlbut, U.S. Army

Rear Adm. John W. Bottoms, SC, USN (Retired), (Defense Supply Agency)

Col. John W. Hanley, USAF (OJCS, Logistics Directorate)

Col. H.T. Casey, USA (OJCS, Office of Special Assistant for Strategic Mobility)

The Board was directly supported by a 105-man staff of military officers and Department of Defense civilians, the majority of whom had served in SE Asia during the Vietnam era.

STUDY APPROACH

The JLRB began its work on 3 March 1969. Background orientation and initial focus were provided by a review of pertinent official documents and reports as well as the solicited views of numerous individuals who had occupied positions of high responsibility in the conduct and support of the Vietnam War. A study plan was developed and the staff organized into teams for the research, analysis, and documentation of selected functional, commodity, and subject areas. The Board and individual study teams visited principal military commands worldwide to solicit information, gather data, and obtain a comprehensive and personal insight into all facets of logistic support operations. Additional data were acquired through reports and specially prepared briefings provided by the Office of the Secretary of Defense, Defense Agencies, Joint Chiefs of Staff, Services, and defense contractor personnel. During the analysis, evaluation, and report writing phases, the Board, as a corporate body, interacted closely with each study team to ensure a broad, policy-level orientation and to strive for a unanimous Board position.

The report does not cover two areas of major influence that are usually associated with logistic support: force structure and the overall acquisition of major weapons systems. The existing force structure and projected or potential changes thereto were accepted as set forth in the Five Year Defense Program. Although the acquisition of major weapons systems normally marks the beginning of the logistic process, the JLRB, with the concurrence of the Secretary of Defense, did not study either the research and development process or the procurement process associated with weapons system acquisition. In addition, the Board did not consider

¹Deputy Secretary of Defense, Memorandum, subject: Joint Logistic Review Board (JLRB), 17 February 1969 (copy enclosed as Appendix A in this volume).

VOLUME I

terminal (T-day) planning other than to submit an informal memorandum to the Secretary of Defense and the Chairman, Joint Chiefs of Staff, on logistic aspects of redeployment from South Vietnam.

REPORT ORGANIZATION

The report of the Board consists of three major volumes and 18 monographs. Volume I is an executive summary. It presents major findings that were derived from a review of the Vietnam era and are believed by the Board to be of enduring value. Volume I also highlights a selective grouping of 46 recommendations, related to the findings, that the Board considers most worthy of high-level attention and implementation.

Volume II is an overall review of logistic support during the Vietnam era. It provides a comprehensive description of environment, logistic systems and posture, and events and changes that occurred during the 1965-70 period, including impacts on worldwide readiness.

Volume III is a compilation of the summary chapters of the 18 monographs. It provides, in a single document, a brief overview and the more significant lessons learned and recommendations developed within each functional or commodity area. Volume III also contains, as an appendix, all of the recommendations of the JLRB.

* * *

The recommendations of the JLRB, when implemented, will greatly improve current logistics systems. Many of the findings and lessons learned are of permanent value and can be considered as logistic principles. Many are lessons relearned in Vietnam—lessons that were lost or obscured in the passage of time since similar Korean or World War II experiences.

TABLE OF CONTENTS

	Page
PREFACE	v
PART I. OVERVIEW.....	1
A. AT THE BEGINNING	3
B. DIMENSIONS OF THE LOGISTIC TASK	3
C. CUSTOMER SATISFACTION	4
D. THE LOGISTIC CHALLENGES	4
E. LOGISTIC PLANNING	5
F. EARLY MANAGEMENT CAPABILITY	6
G. MILITARY COMMITMENT	7
H. AMMUNITION PRODUCTION.....	8
I. DEPLOYING FORCES TO SE ASIA	9
J. THE BUILDUP	10
K. THE JOB OF THE JOINT COMMANDER	10
L. FOREIGN ASSISTANCE	12
M. CONSTRUCTION	13
N. AUTOMATIC DATA PROCESSING EQUIPMENT...	14
O. COMMUNICATIONS	15
P. COMMON SUPPLY	15
Q. POL	16
R. EXCESSES	18
S. CONTAINERIZATION	20
T. CONCEPTS FOR FUTURE LOGISTIC SUPPORT IN THE COMBAT AREA	22
PART II. MAJOR RECOMMENDATIONS	25
A. RESPONSIVE LOGISTIC PLANNING	27
B. EARLY MANAGEMENT CAPABILITY	31
C. FORCE STRUCTURE	33
D. AMMUNITION	35
E. TRANSPORTATION	37
F. JOINT LOGISTIC RESPONSIBILITIES.....	41
G. FOREIGN ASSISTANCE	43
H. CONSTRUCTION	45
I. ADPS SUPPORT IN THE COMBAT AREA	49
J. COMMUNICATIONS	51
K. COMMON SUPPLY	53
L. POL	57
M. EXCESSES	59
N. CONTAINERIZATION	63
O. CONCEPTS FOR FUTURE LOGISTIC SUPPORT IN THE COMBAT AREA	67
PART III. SUMMARY	71
APPENDIX A. DEPUTY SECRETARY OF DEFENSE MEMORANDUM: "JOINT LOGISTIC REVIEW BOARD (JLRB)".....	A-1

PART I

OVERVIEW

A. AT THE BEGINNING

1. In January 1965, the U.S. military commitment in South Vietnam--about 23,000 strong--consisted of a Military Assistance Command, a substantial number of advisers with South Vietnamese units, company- and squadron-sized Army and Marine helicopter units with their logistic support, 5th U.S. Special Forces Group, seven Air Force squadrons, a Navy Headquarters Command in Saigon providing common supply support to U.S. military activities in the area, and an office of the Navy's Bureau of Yards and Docks (later Naval Facilities Engineering Command) providing supervision of contractor construction support to the various in-country U.S. military elements.

2. Offshore, the Navy's Seventh Fleet patrolled the waters adjacent to North Vietnam. With the Seventh Fleet were substantial logistic resources in the form of elements of the Service Force and the Amphibious Force.

3. The logistic facilities available in-country were almost nil. The country had only one major deep-water port at Saigon--60 miles up-river from the sea. The port was heavily committed to commercial operations and there were no specific allocations of berths to the U.S. military, nor were there any substantial military port operating troops in-country.

4. In the months preceding January 1965, it had become increasingly apparent that the South Vietnamese military situation was deteriorating under increased pressure directed from Hanoi. The deteriorating military situation not only augured a collapse of the Government of South Vietnam but it also threatened the safety of the U.S. forces in-country. Accordingly, military planners in Saigon, Hawaii, and Washington devoted increased attention to the augmentation of U.S. strength in-country.

B. DIMENSIONS OF THE LOGISTIC TASK

1. Once the decision was made to commit U.S. combat units in strength to the defense of South Vietnam, military logisticians were confronted with the task of supporting a massive buildup operation. The following statistics indicate the scope and magnitude of logistic support operations in Vietnam during the period 1 January 1965 to 1 January 1970:

a. In the first 17 months after the July 1965 decision to deploy major forces, over 385,000 troops were deployed--without mobilization of the Reserve forces.

b. Free World Military Assistance Forces supported in Vietnam totaled over 1 million men, including more than 550,000 U.S. forces.

c. Over 2 million U.S. military personnel have served in Vietnam.

d. Over 17 million short tons of dry cargo were shipped by sea and over 750 thousand short tons by air.

e. A massive \$4 billion construction program was accomplished. It consisted of:

(1) 7 deep-water ports with 27 berths

(2) 12 runways at eight major air bases with 200 small airfields and 200 helicopter ports

(3) 11 million square feet of covered storage

(4) 1.8 million cubic feet of reefer storage

(5) 8,250 hospital beds

(6) Major tactical bases, communication sites, roads, bridges, POL storage and pipelines, administrative facilities, as well as innumerable projects by unit engineers and self-help programs.

f. 163 millions of barrels of POL products were consumed in Vietnam.

2. These statistics refer only to support of activities in the Republic of Vietnam itself. Although they do indicate the size and scope of logistic operations in support of the war, there were other significant logistic operations in the Western Pacific area in support of U.S. Air Force units based in Guam, Thailand, and the Philippines, and elements of the U.S. Navy's Seventh Fleet deployed in waters off SE Asia.

C. CUSTOMER SATISFACTION. These tasks were not easily accomplished, nor was progress always smooth, efficient, and economical. On the contrary, the logistic effort often seemed to lag behind the demands for facilities, personnel, equipment, and money. It was not until the end of 1968 that the logistic structure in terms of organization, personnel, and facilities was fully adequate for the tasks at hand. A notable aspect of this situation was the almost unbelievably high satisfaction of the demands of the combat units. The military commander in Vietnam, the General Accounting Office, and Congress all have attested that, with relatively minor and temporary exceptions, U.S. forces committed to conflict have never been better supplied than those in SE Asia. In this context, it may be said that the logistician achieved his goal—satisfying the requirements of the soldier, sailor, marine, and airman facing the enemy at the end of the logistic pipeline. This report, like any analysis leading to recommendations or improvements, may tend to obscure a creditable logistical performance by accentuating difficulties and inefficiency. In following the ensuing portion of this summary assessment, the truly remarkable logistic achievements of the Vietnam era should not be forgotten.

D. THE LOGISTIC CHALLENGES

1. The deployment of U.S. combat forces to SE Asia placed formidable demands on military logisticians. Some of these demands were familiar and others were unique. The more familiar ones were:

- a. A hostile and undeveloped environment
- b. A long pipeline
- c. The strong initial impact of wartime stresses on a Defense establishment that was in the throes of reorganization.

2. Although these factors all contributed to logistic difficulties, in varying degrees they also reflected past experience. In some respects, they represented less demanding conditions than have been experienced in previous wars. Our sea and air lines of communications to Vietnam, for example, were unchallenged, and our logistics operations in the combat zone were never threatened by attack from the air. Both friendly and enemy operations were conducted in a nonnuclear environment.

3. The unique demands derived from the following facts:

- a. U.S. forces were committed without lead time for normal or special logistic preparations.
- b. U.S. military power was applied incrementally with continual changes in logistic requirements furnishing little opportunity for coherent long-range planning.

c. A conflict of major proportions was conducted without mobilizing Reserve forces and civilian industry.

d. Logistic operations of the military departments were subjected to a degree of control at the Department of Defense level that required the referral of many logistics decisions to high levels for resolution.

4. It is not for the Joint Logistics Review Board, however, to examine the national security and economic considerations that led to these decisions on the conduct of the conflict and to extensive control over departmental logistic support operations. The Board study is directed toward capturing the lessons learned, not only those related to comparable experiences of the past, but also those deriving from the special parameters that evolved during logistic support of operations in SE Asia.

5. The major thrusts of the Board interest are concerned primarily with actions the military departments, the Joint Chiefs of Staff, and the unified and specified commands can take to adjust effectively and economically with the economic, political, environmental, and enemy-induced influences that constrain or otherwise affect logistic support. In developing actions that should be taken to improve the responsiveness and economy of logistic operations, the Board has recognized that new concepts and new technologies can play a significant role.

E. LOGISTIC PLANNING

1. When the decision was made in 1965 to commit major U.S. forces, the operational plans for SE Asia were not precisely relatable to the situation as it actually developed, although they were generally applicable. Despite general impressions to the contrary, the contingency plans for SE Asia of the Commander in Chief, Pacific (CINCPAC), and the supporting plans of his component commanders and the Military Assistance Command, Vietnam (MACV), were developed in considerable detail and pinpointed most of the logistic shortfalls and limiting factors. But, unfortunately, in many cases actions to alleviate the impact of critical shortfalls and limitations had not been taken. The planning process did not provide for positive followthrough to ensure programming and budgeting support of long lead time and critical items such as mobile piers, barges and lighterage, heavy construction equipment, and other material peculiar to the theater contingency plans. Although most of the deficiencies (with the notable exception of requirements for port construction) were reviewed and recognized by the Joint Chiefs of Staff and the Services in February 1965, by then it was too late. Failure to take actions to overcome all the critical deficiencies identified in logistic planning contributed to inadequate port throughput capacity, sea and aerial port congestion, inadequate storage facilities, and loss of identity of material.

2. Logistic shortfalls properly identified in logistic planning should have formed the basis for budgetary action to provide minimum essential resources. To the extent that these resources were not provided, additional steps should have been taken to modify plans to live within the constraints of inadequate logistic resources. In the case of the buildup in SE Asia, this modification of planned support would not have meant any changes in the deployment schedules for combat units, but should have resulted in earlier emphasis on port development and in concentrating on high-demand, essential support items with severe reduction in a wide range of requirements that inundated port clearance and depot reception capabilities.

3. Actual events have proved that the combat forces were adequately supported, but they were not supported by material held in ships at anchor nor by material piled in the open, exposed to the elements, and long unidentified. These materials were not usable assets. They were obstacles that compounded logistic problems. The obvious remedies were to tailor shipments to the effective receiving capacities of ports and depots and concurrently provide for rapid expansion of logistic capabilities. These remedies should have been recognized in the planning process.

BOARD FINDING NO. 1

The planning system of the Department of Defense must provide for (1) a realistic appraisal of logistic resources to achieve balance between operational concepts and logistic capabilities; (2) the establishment of credible requirements for critical logistic resources; and (3) recognition in the Planning, Programming, and Budgeting System of the impact of inadequate logistic resources on operational capabilities.

F. EARLY MANAGEMENT CAPABILITY

1. Although the planning process did not provide for positive followthrough action to ensure programming and budgeting support of long lead time and critical items, U.S. commanders in South Vietnam had long recognized inadequacies of the in-country logistic posture. The prospects of increased U.S. military involvement reemphasized the requirement for improving logistic posture. On 30 October 1964, the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), formally reaffirmed to CINCPAC a 1962 request that an Army logistic command be assigned to his command.

2. The request was not to be promptly approved. On 15 January 1965, the Joint Chiefs of Staff recommended approval of a 2100-man logistic force in principle and immediate deployment of a 230-man advance party. The Office of the Secretary of Defense, constrained by rigid ceilings on military personnel in Vietnam, deferred a decision until 12 February and, while approving the concept, only authorized a nucleus planning staff of 75, which arrived in Vietnam in March 1965. This austere planning group was barely on the scene when deployment of combat units commenced. As a result, the logistic force structure was soon overwhelmed, and requirements generally exceeded logistic capabilities throughout the buildup period.

3. Even after the decision was reached to deploy a Logistic Command, it was not until January 1966 that the serious proportions of logistic problems in SE Asia led the Army to assign to the theater one of its senior experienced logisticians (a lieutenant general as Deputy Commander, U.S. Army, Vietnam) capable of dealing with interrelated logistic problems of construction, transportation, and supply management. If the logistic management organization in Vietnam had been able to bring this type of perspective to the growing problems of the buildup—congestion of ports, logistic equipment on deadline, depots overwhelmed with unidentified supplies—many of these problems would have been recognized and minimized at their inception. At the least, the early logistical expertise and experience this type of management could have brought to bear on the resolution of the problems would have limited their scope and impact on supply operations.

4. The Army's task in establishing a logistic command organization in Vietnam during the early stages of the buildup was greater than that faced by the other Services. The Navy faced a similar task when in April 1965, to adapt to Service needs and capabilities, CINCPAC assigned primary logistic functions in the five northern provinces in the Republic of Vietnam to the Commander in Chief, Pacific Fleet (CINCPACFLT). However, the dimensions of the Army problem were greater because of size, multiple locations, and fluid troop deployments, and because it was the single Service provider of many common supplies and services while receiving comparatively little logistic support in the theater from the other Services.

5. In general, it might be said that the Army logistic command organizational structure in Vietnam was developed from the bottom up—responding to problems rather than minimizing the probability of problems and limiting their scope. In contrast, the top-level command and control organization for tactical operations was developed from the top down—from a four-star commander using the MACV Staff as a nucleus. A top-level logistic commander and his staff should have been available to participate with the MACV staff in early planning and should have been on site at the beginning of the buildup to establish authoritative and competent control over Army logistic support operations. There is no substitute for authority and responsibility vested in a thoroughly competent individual.

BOARD FINDING NO. 2

A component commander required to furnish major logistic support to ground forces in a contingency operation must be provided with a logistic management capability, vested in an officer whose rank and logistic experience are appropriate to the ultimate scope of the logistic operation. This senior logistician and his staff must participate in prior planning for contingency operations and be deployed to the area concurrently with the forward echelon of the headquarters of the combat forces.

G. MILITARY COMMITMENT

1. Planning for possible actions in SE Asia in 1964 and early 1965 was based on the understanding that major contingency action would be accompanied by mobilization of appropriate Reserve forces. Under peacetime conditions and policies there had been extensive civilianization of military activities in CONUS and dependence on the Reserves for the majority of Army combat service support units and technical personnel required for wartime operations. The stage was thus set for shortages not only of units but in specific skills, technical training, and availability of middle management military personnel in such fields as transportation, supply, maintenance, POL, inventory management, and automatic data processing.

2. After initial deployments in the spring of 1965, the U.S. decided in July to increase substantially its combat forces in Vietnam as rapidly as possible but without mobilizing Reserve forces. When deprived of this reservoir of trained and skilled manpower, the Services, in varying degrees, experienced difficulty in meeting initial and subsequent requirements for logistic personnel and units. The Army, with by far the most radical change from peacetime to wartime logistic operations and the greatest burden of support requirements in Vietnam, was the most hard pressed—its strength requirements increased 50 percent within 2 years. With critical deficiencies in logistic units, the decision not to mobilize the Reserves or to allow selective callups led to drawing logistic personnel and units from forces in other theaters. Crash training programs, intensive recruitment of civil service personnel, reduction of CONUS tours, and volunteer programs were also initiated.

3. Extensive use of contractors and civilian personnel for construction, base facilities maintenance, equipment maintenance, and port and depot operations was necessary and appropriate. However, difficulties were at times encountered as a result of shortages of sufficient numbers of qualified personnel to administer and guide contract operations, and it was necessary to extend the scope and areas of some such operations beyond that for which they were as effective, responsive, and efficient as military logistic forces.

4. In their effort to respond promptly, the Services found themselves caught between the strictly enforced personnel ceilings in Vietnam and the increasing requirements for logistic personnel and units as incremental decisions raising the level of combat forces were made. The extensive and detailed justification required for additional personnel caused delays in meeting requirements. The incremental decisions created new logistic missions and tasks without lead time for essential personnel planning and unit activation and training.

5. Notwithstanding the difficulties and problems, the essential requirements for the support of the Vietnam operation were fulfilled. Although as late as early 1968 there were some unfilled requirements, no instance was found in which a logistic activity was degraded to the extent that it restrained important military operations. At the same time, the military must recognize the precedent established in fighting a major conflict without calling up the Reserves.

BOARD FINDING NO. 3

The force structure of the active duty components of the Armed Forces must be designed to permit adequate logistic support of ready forces in quick reaction to emergency situations. During peacetime, emphasis was in some cases placed on the maintenance of combat and combat support forces without adequate combat service support units and trained technical personnel. As a consequence, when contingency operations are undertaken and the Reserves are not called up, serious deficiencies in logistic units and trained logistic personnel may be expected. There is a need, therefore, to enhance readiness to respond promptly to limited war of scope comparable to the Vietnam conflict without reliance on national mobilization or callup of Reserves to conduct logistic operations.

H. AMMUNITION PRODUCTION

1. The decision not to call up Reserve units and manpower was accompanied by a decision not to impose wartime controls on industry. The incremental nature of deployment decisions increased the difficulties of the military procuring agencies, and in some cases units deployed without full organizational equipment. On the whole, however, procurement problems proved manageable.

2. As usual, a decision to escalate the conflict immediately put particular pressure on the ammunition production base. Although ammunition procurement has a major dollar and facilities impact, industry is not basically oriented for quick transition to such production. Ammunition facilities are largely Government-owned, but they had not been adequately maintained in the post-Korean era. In those instances where production was wholly or partly industry-oriented, civilian enterprise was reluctant to undertake defense contracts to the detriment of commercial business.

3. Given the importance of ammunition to the war effort and the high-dollar impact on the economy of major programs for activating and rehabilitating old ammunition facilities and providing new construction for increased production and support of new weapon systems, the Office of the Secretary of Defense (OSD) became intimately involved in all aspects of ammunition supply from validation of requirements to day-to-day monitoring of production.

4. Procurement responsibilities were almost wholly vested in the Army and the Navy, following World War II patterns and precedents. There were many items used by two or more Services. One of the most important items was the 2.75" air-to-ground rocket used by all four Services. OSD directed that production of this munition be assigned to an Army project manager with a joint staff. The production program was responsive to Service requirements and indicated that extension of the principle of single Service and project managership to other munitions or groups of munitions should prove advantageous.

5. Procurement and production assignments should be consistent with Service use as well as technical capabilities. However, responsibility for the loading, assembly, and packing of conventional bombs is presently divided between the Navy and the Army, even though the Army does not use these bombs. The Air Force—the largest user of bombs—has no procurement assignment. Although neither a major developer nor user, the Army is also assigned responsibility for procurement and production of incendiary bombs, including all napalm bombs. In actual practice, however, the Navy and the Air Force have procured certain firebombs which they have separately developed to meet the differing requirements of shipboard and land-based operations.

BOARD FINDING NO. 4

Procurement and production of an ammunition item involving large volume, extensive noncommercial facilities, high costs, and multiple users should be assigned to one of the primary users of that particular munition or related group of munitions.

I. DEPLOYING FORCES TO SE ASIA

1. The success of U.S. operations in Vietnam depended upon our ability to move a large military force to the area and sustain it in combat. The change of pace in transportation operations in support of SE Asia was sudden and expansive. During the first half of CY 65, equipment and cargo flowed into Vietnam at the rate of 140,000 measurement tons per month. During the latter half of that year, the rate jumped to 460,000 measurement tons per month and had climbed to 740,000 by the end of CY 66. The remoteness of the area and the quantity of cargo and the number of personnel to be moved underscored the importance of responsive transportation support. The marshalling of transportation resources alone was a major challenge, since neither the requisitioning of U.S. commercial shipping nor the activation of the Civil Reserve Air Fleet was authorized.

2. The U.S. merchant marine had been a waning national asset for a number of years prior to the start of the Vietnam era. Nevertheless, sealift still provided most of the intertheater and intratheater cargo lift to Vietnam, moving more than 95 percent of the dry cargo tonnage.

3. On 1 January 1965, the Military Sea Transportation Service (MSTS) nucleus fleet consisted of only 89 ships—many of which were of World War II vintage. In the initial period of the buildup, this fleet did not have sufficient capability to meet requirements for the intertheater movement of helicopters, light aircraft, lighterage, and other outsized cargo; nor was there sufficient shallow-draft shipping for intracoastal movement of supplies. By 1967, the nucleus fleet had been expanded to 119 ships. The bulk of the shipping requirements were met, however, by the procurement of shipping offered by the U.S. shipping lines, by the activation of ships in the National Defense Reserve Fleet, and by chartering foreign merchant ships and tankers. By July of 1967, a total of 527 ships were controlled by MSTS—including the nucleus fleet, those operated under General Agency Agreement, and ships under charter or container contract. These measures provided adequate and responsive sealift support.

4. Although sealift carried the major burden in moving material to SE Asia, airlift was the dominant factor in moving personnel and proved to be an increasingly indispensable capability for the movement of critically needed supplies and equipment. Starting with an airlift of 85,000 personnel from the United States to Vietnam in 1965, almost 2 million had been airlifted by the end of CY 69. Airlift soon became the routine method of movement for aircraft engines, helicopter engines, and other high-value repairable items. It was also used extensively for the movement of items that, had they not been critical to our combat effort, would not have normally moved by air. These included 175mm gun tubes (76 feet long and weighing 4 tons) and a new type of antipersonnel bomb.

5. The Military Air Transport Service, later the Military Airlift Command, entered this era without an adequate long-range jet cargo transport aircraft. The airlift system was at times saturated during the buildup period, and substantial quantities of air cargo were diverted to surface transportation. Despite these problems, the response of the Military Airlift Command and the U.S. commercial airlines was considered outstanding. The organic fleet of the Military Airlift Command was modernized with the receipt of the C-141, and additional long-range jet aircraft were acquired by the airlines. This resulted in a substantial increase in airlift capacity. Although the bulk of military requirements will continue to move by surface, the additional airlift capability with the introduction of the C-5 should be used to optimize the benefits to be obtained from the use of premium transportation.

BOARD FINDING NO. 5

An adequate transportation capability, with a proper balance between sealift and airlift resources, is essential to deployment and successful support of forces deployed in an overseas area. Since the bulk of materiel must be transported by surface means, an adequate and responsive sealift must be in-being. Such a capability is dependent on a modernized Military Sea Transportation Service nucleus fleet backed by access to the resources of an equally modern U.S. merchant marine. A responsive and adequate airlift must be available to support initial deployments, to provide for follow-on movement of personnel, items designated for normal movement by airlift, and for high-priority materiel. The growing capability of U.S. civilian and military airlift emphasizes that the Services must develop and test boldly engineered logistic systems to exploit the advantages inherent in this mode of transportation.

J. THE BUILDUP

1. Although air and sea transport capability to the theater was at times critical, it was not a governing factor in the rate of buildup. Reception capability was the major problem, compounded by initial loading of ships for multiple port discharge and deficiencies in packaging and unitization. Logistic units and logistic facilities were inadequate for efficient ship discharge, port clearance, and depot operations. These inadequacies, which were inherent in the undeveloped theater of operations and the shortage of logistic units, were well recognized. However, the exigencies of the military situation dictated a policy decision not to allow logistic capability to pace the rate of buildup. Combat forces were deployed as rapidly as they were ready, and transport capability became available.

2. Logistic capabilities in-country were expanded by maximum utilization of contractors using U.S. personnel, indigenous personnel, and third-country nationals—while still maintaining a nucleus of capabilities for emergencies. By 31 December 1965, 184,000 troops had been deployed in-country and were being supported adequately, although not at maximum efficiency. One hundred and twenty-two ships were loaded with cargo and awaiting discharge in Vietnamese waters. In addition, a substantial number of ships were held up in anchorages in the Philippines, Okinawa, and other locations. Cargo was beginning to overflow in the depots, and masses of undocumented material were stored in every available space—mostly in the open on unimproved ground. It was then clear that additional introduction of troops must be delayed in order to give logistic forces an opportunity to restore some measure of logistic control.

K. THE JOB OF THE JOINT COMMANDER

1. As the buildup in Vietnam progressed, it became apparent to Admiral Sharp, the Commander in Chief, Pacific, that the commander of a unified command must exercise his directive authority in the field of logistics to control the allocation of limited services and material to the multiservice needs of the highest priority. A change evolved in the nature of logistics management within the Headquarters of CINCPAC and in his subordinate unified command, MACV. These headquarters became actively involved, in coordination with component commanders, in movement control to regulate the flow of material to the capacity of logistic transportation resources, in the allocation of air munitions and other critical items, and in construction programs.

2. Cargo movement control organizations and procedures were either not in existence at the start of the Vietnam buildup or were not fully effective in coordinating the necessary interface between shippers, transportation operating agencies, and consignees in SE Asia. There were inadequate procedures to effectively coordinate inter- and intratheater shipments with Vietnam receiving capability, and to identify those materials that must go first in case of lift shortage or limited receiving capability. In addition, considerable cargo sponsored by the Agency for International Development was moving to Vietnam without prior knowledge of any DOD movement control agency.

3. The lack of an adequate movement control system was a contributing factor to the confusion in the coordination between logistic support organizations in the continental United States (CONUS) and the Pacific Command (PACOM), to port congestion and the tie-up of ocean shipping resources, and to a lack of proper coordination within the transportation system itself. There was no real improvement in the situation until a movement control network, responsive to the needs of CINCPAC and COMUSMACV, had been established.

4. The CINCPAC movement control network included the expansion of the Western Pacific (WESTPAC) Transportation Office to give it the capability to manage intertheater shipments, and the establishment in late 1965 of the MACV Traffic Management Agency (TMA). TMA gave COMUSMACV a mechanism for the management of traffic in Vietnam and a forum to resolve transportation priorities and allocate the use of critical transportation assets. The framework of the CINCPAC network was completed with the activation of the Pacific Command Movements Priority Agency (PAMPA) in early 1966. PAMPA acted as a needed link between PACOM and the CONUS support base. It was the agency through which actions to curtail the flow of material and match incoming cargo flows with port throughput capacity were taken in coordination with the component commands.

5. The rapid rise in the expenditure of air munitions resulted in a shortage of some types of bombs. CINCPAC was forced to assume control of these items and redistribute assets within the command without regard to Service ownership. Certain critical items of ground munitions and equipment, such as M-16 rifles, were also controlled at the unified command level.

6. A massive construction program was undertaken to meet operational needs and to convert the limited facilities of Vietnam into a sustaining logistic base. The size of the program soon outstripped the management ability of the small staffs available within MACV and its component commands. A strong construction directorate, subordinate to MACV, was formed to achieve the proper degree of control and make the construction effort responsive to the needs of the command as a whole.

7. The provision of an adequate supply of petroleum products was a vital concern of both CINCPAC and COMUSMACV. A military POL supply system was established in addition to the commercial system. The establishment of new POL ports of entry, tank farms, pipelines, floating storage, and shuttle tanker service had to be integrated in the overall POL distribution system. Actions were also taken to improve the system for accounting for the use and issue of POL products.

8. The long lead time involved in the processing and implementation of major communications requirements required continual attention at the unified command level. The communications traffic load increased at a rapid rate, with extraordinary demands for high-quality circuits for transmission of digital data. Close control of the system design effort was necessary to ensure that the eventual long lines system could provide adequate service to all users in the area.

9. The number of hospital beds in PACOM increased sixfold from 1 January 1965 to 30 June 1968. This swift expansion of vital medical services required a closely coordinated multiservice effort, including a joint medical regulating system, which was used to control the evacuation of patients from Vietnam to other hospitals in PACOM and CONUS. Coordination and supervision by the unified command was essential to provide the best possible medical care and the efficient use of all medical facilities.

10. CINCPAC's experience in control and coordination of various aspects of the logistic support for Vietnam underlines the necessity for a unified commander to anticipate his direct involvement in logistic operations.

BOARD FINDING NO. 6

Although the basic responsibility for the support and maintenance of forces must remain with the Services, unified commands must plan for and be staffed for active involvement, when required, in the multiservice aspects of transportation and movement control, construction, ammunition and petroleum resupply, communications, medical evacuation and hospitalization, and control of critical items.

L. FOREIGN ASSISTANCE

1. In Vietnam, foreign assistance complemented the application of U.S. military force in implementing national foreign policy. The assistance rendered can be categorized as:

- a. Direct logistic support of allied military forces
- b. Civil assistance programs of the Agency for International Development (AID).

Although the necessity of such assistance in the event of a contingency operation was recognized prior to the buildup of U.S. forces, none of the planning envisioned the ultimate extent of the support that would be required. The execution of assistance programs in Vietnam occurred under conditions that differed radically from those assumed in the contingency plans. These differences had direct impact on the ability of commanders to logistically support deployed U.S. forces.

2. Plans for the support of allied armed forces were predicated on orders of battle that were understated for the Vietnamese and almost entirely inaccurate for third-country forces. The PACOM component commanders had been tasked with developing logistic plans for the equipment and support of selected counterpart allied forces should the contingency plan be implemented. As the tempo of operations quickened, the necessity to modernize and support forces far larger than those envisioned during the planning cycle was recognized. The funding, response, and materiel constraints of the Military Assistance Program were alleviated in March 1966, when Congress authorized expenditure of regular Service appropriations in support of allied forces in SE Asia. Through Service funded military assistance, the Department of Defense has provided direct logistic support to approximately 1.1 million members of allied armed forces and about 2.0 million Vietnamese in the Peoples' Self Defense Force. In view of the ongoing Vietnamization program and the stated policy of meeting threats to the security of the free world through enhanced programs of military assistance, rather than through direct military intervention by U.S. forces, it is apparent that future planning must include carefully considered and coordinated programs for logistic support of allied forces.

3. The plans for rendering assistance to the Vietnamese civil sector called for gradual assumption of AID's responsibilities by Army Civil Affairs Units. The decision to maintain AID's role in Vietnam resulted in the continued existence of a second major U.S. logistics system in a country that did not have the facilities to adequately support a single system. Inasmuch as AID's evolving civil assistance programs resulted in importation of more than 40 percent of the total cargo tonnage introduced into Vietnam during 1966, the competition for logistic resources and need for close coordination between the military and civilian managers is apparent. The mechanisms for effecting resolution of differences grew on an ad hoc basis. The lack of logistic visibility in civil programs resulted in interface and coordination problems for the combat commander beyond any in previous U.S. warfare experience.

BOARD FINDING NO. 7

U.S. foreign assistance activities require coordination at the interdepartmental level during planning for and execution of military contingency operations, whether or not U.S. combat forces are deployed. During the planning process, it is especially important to define clearly the responsibilities for and the relationships between military and civilian activities.

M. CONSTRUCTION

1. The logistic problems originating with the rapid buildup were compounded by a lack of facilities. A massive construction effort was prerequisite to normalizing supply, maintenance, and distribution operations. Construction capability in Vietnam and engineer troop units available in the Services at the start of the buildup were inadequate. COMUSMACV's request for an Army Engineer Group in October 1964 was not approved until April 1965. At about the same time, contractor construction capability was rapidly expanded. Contractor forces were mobilized as rapidly as possible, reaching a peak strength of about 51,000 in 1966. These forces were gradually reduced as engineer troop units became available and deployed.

2. The sheer magnitude of the construction task inevitably delayed the availability of facilities. Management of the construction effort was complicated by limited troop and contractor capabilities, by a shortage of heavy construction equipment, and by growing urgent requirements scattered throughout the country.

3. Under COMUSMACV, coordination and management of base development planning and construction was a function of the Engineer Staff in the Office of the Assistant Chief of Staff for Logistics, which had, up until the buildup, been concerned primarily with the Military Assistance Program. With the decision to commit major forces, the responsibilities of the Engineer Staff were expanded to include military construction. Actual accomplishment of the responsibility was inhibited by the inability of the small engineer staff to handle a program of the magnitude to which the one in the Republic of Vietnam (RVN) grew. As a result, priorities for projects or complexes for the use of limited construction resources were often not resolved. When priorities had not been balanced in consideration of importance, urgency, and available resources, then the allocation of construction resources by the DOD Contract Construction Agent (Officer in Charge of Construction, Vietnam (OICC, RVN), Naval Facilities Engineering Command) often had the effect of making priority decisions, although there was consultation between the construction agent and COMUSMACV and his staff. The establishment of relative priorities covering the total construction effort was further hampered by changing requirements brought about by changing patterns of combat operations and deployments necessitating changes in the facilities to conduct and support these operations. The construction program was, therefore, extremely dynamic and required intensive direction and coordination that the limited capabilities of the engineer staffs could not provide. The need for effective management was recognized and, in February 1966 at the insistence of the Secretary of Defense, a Director of Construction was established with adequate manning to effectively direct and control the base development program.

4. Although the establishment of a Director of Construction improved the management problem, funding problems still existed. The peacetime programming and funding procedures for Vietnam construction, although somewhat modified, were essentially those used for military construction appropriations with their time-consuming procedural road blocks. (Although some relief was provided in 1966, peacetime procedures were reverted to in 1967.) The procedures did not recognize the fact that the situation in Vietnam was constantly changing and that construction requirements could not be forecast accurately far ahead of time. The requirement to define the construction program, by line item, months before construction was to be initiated resulted in the constant necessity to reprogram, reevaluate, rejustify, and resubmit with all the attendant administrative burdens and delay in accomplishing the required construction. Under this system COMUSMACV had virtually no flexibility to respond in a timely manner to the exigencies of the situation.

5. Although construction in Vietnam was primarily a process of converting bulk raw materials into facilities, Vietnam experience stressed the importance of functional components and preengineered and prefabricated structures. Each Service had designed functional components with a limited amount of assets on hand at the start of the buildup. These assets, augmented by purchase of commercial prefabricated structures, greatly facilitated the construction of facilities and indicate an area of great potential for improving construction responsiveness and reducing construction troop requirements and the overall logistic workload.

BOARD FINDING NO. 8

The planning and implementation of construction programs related to contingency operations should incorporate:

- a. Service development of construction requirements
- b. Centralized in-country coordination and control of construction at the unified command level
- c. Planning, programming, and funding procedures tailored to an emergency situation
- d. The use of preengineered, prefabricated, relocatable facilities as a means of improving construction responsiveness and reducing the construction effort.

N. AUTOMATIC DATA PROCESSING EQUIPMENT

1. Although lack of logistic manpower and inadequate logistic facilities were primary causes of inefficiencies in supporting the combat troops, an early deployment of automatic data processing equipment (ADPE) with proper programs, trained operators, and the capability to accommodate rapidly expanding requirements would have materially assisted the establishment of proper supply management.

2. Automatic data processing systems (ADPS) provide an indispensable tool for logistic managers faced with mounting volumes of logistic data, and their use steadily increased during the Vietnam era. Introduction of computer operations in Vietnam followed initial manual and punch-card operations that could not cope with the rapid increases in processing requirements or interface with computerized systems in CONUS.

3. ADPS that were not capable of expansion quickly became inadequate as additional forces were deployed, resulting in the necessity to upgrade the equipment in successive stages. Expected benefits were not immediately achieved as each upgrading operation required new programs, data transfer from previous equipment, and new personnel trained on the equipment deployed.

4. Early introduction of ADPE could have provided a powerful management tool to assist in recording the receipt and location of stocks, the computation of stock levels and an institution of more orderly, responsive requisitioning and distribution procedures. Instead, delays in introducing adequate ADPE contributed to the breakdown of the Uniform Materiel Movement and Issue Priority System, as well as generally limiting logistic management capabilities in-country.

5. It took several years to develop the level of ADPE support in Vietnam necessary for efficient logistics management and to obtain maximum benefit from the continuing improvements being made in the related Service and Defense Supply Agency systems.

BOARD FINDING NO. 9

Effective and efficient logistic support to deployed forces has become absolutely dependent on Automatic Data Processing Systems (ADPS) in supply and maintenance operations. ADPS capability for logistic management must be introduced in a combat theater as soon as possible with adequate communications support and with the capability of interfacing with ADPS outside the combat area.

O. COMMUNICATIONS

1. Expanding use of ADPE in logistic management highlighted already severe problems in communications. Communications within Vietnam were almost nonexistent at the beginning of the U.S. effort. Access to out-of-country networks from Vietnam was initially limited by dependence on a submarine cable to the Philippines, unsatisfactory communication links to logistic support bases in Okinawa, and technical limitations of quality and capacity of available circuits.

2. As the buildup progressed, unprecedented volumes of traffic overwhelmed the communications systems. Inordinate efforts were required to engineer new circuits and to obtain the necessary funding. Despite continuing emergency programs to expand and upgrade the communications system, it was not until mid-1968 that total capacity and automated capabilities were adequate, especially in transition from teletype operations to use of the automatic digital network (AUTODIN).

3. The introduction of ADPS had a profound and unanticipated impact on communications requirements. To take advantage of the improved response times offered by ADPS, the installation of high-capacity and high-quality data links was required for high-speed transmission of masses of digital data. Initially, the transmission of digital data was hampered by low-quality in-country circuits, mixed-quality out-of-country circuits, and manual switching facilities. Data transmission over this system was subject to a high error rate, making its use unreliable. By mid-1967, circuit quality and manual switching facilities had been improved and expanded with automatic switches operational a year later.

4. To obtain high-quality, reliable communications it was planned to replace the tactical equipment initially employed in the Defense Communications System (DCS) with fixed-plant installations. However, owing to delays in construction of the fixed plants and expanding requirements, as late as October 1967, 70 percent of DCS circuits in Vietnam were through mobile/transportable equipment whose quality was limited. Heavy transportable equipment was, and remains, unavailable to provide both responsiveness in deployment and the high-quality high-capacity circuits necessary over extended periods to achieve modern logistic management potential for efficiency and effectiveness.

BOARD FINDING NO. 10

Logistic management has become increasingly dependent on automatic data processing and high-speed digital data transmissions, both within the contingency area and between CONUS and overseas locations. Therefore, logistic contingency planning must be explicit as to communications requirements, and heavy transportable self-contained equipment must be developed to provide prompt availability of high-quality circuits, automatic switches, and terminal equipment to tie into the automatic digital network (AUTODIN).

P. COMMON SUPPLY

1. Prior to the buildup, the Navy was responsible for administrative and common logistic support of MACV in Vietnam. This responsibility was discharged through the Headquarters, Support Activity, Saigon, whose tasks at that time included operation of the military portion of the

port of Saigon, warehousing in Saigon, motor and air transportation, housing and messing, industrial relations, security, construction, and housekeeping services, as well as providing support to all Services for selected items of common supply. Headquarters, Support Activity, Saigon, also provided support to Navy elements in-country for Service-peculiar items. The other Services obtained their Service-peculiar support through their respective Service channels.

2. With the beginning of the buildup, CINCPAC and COMUSMACV became active in the establishment of overall policies for joint logistical planning and in the coordination of logistical operations. Service component commanders were made responsible for the execution of policy decisions. Four major support areas, corresponding to the four major tactical zones, were created: Da Nang, Qui Nhon, Cam Ranh Bay, and Saigon. The Army component commander was assigned primary responsibility for support in the zones for which Saigon, Cam Ranh Bay, and Qui Nhon provided the logistic base. As ultimately organized, support functions in these areas were placed under the control of the Army's 1st Logistical Command. Based on Service needs and capabilities and the preponderance of Marines in the north, the CINCPAC naval component commander was assigned major logistic functions for support in the zone for which Da Nang provided the main logistic base. Most of the in-country support functions in this area were carried out through the Naval Support Activity, Da Nang, which was established for this purpose. Thus, logistic support in SE Asia was provided on an area basis for all common supply and service activities, and Service-peculiar support remained the responsibility of the individual service component.

3. The provision of common support, although a primary responsibility of the Army and the Navy in their respective areas, was at times improvised on a case-by-case basis as the need arose and the capability existed to provide it. For example, Air Force bases generally provided common support to units located nearby. Cross-servicing between units was a common occurrence, mainly because of rapidly changing force deployments to meet combat requirements.

4. The concepts of common support worked well in Vietnam for subsistence and for selected items of packaged and bulk POL. Common supply did not always work satisfactorily for some categories, such as housekeeping supplies, because the factors that degraded the performance of Service supply systems in-country also affected common supply performance. The Defense Supply Agency (DSA) response throughout the Vietnam era to requirements from the combat theater is evidence of superior common supply support in CONUS. Although 70 percent of the items stocked by DSA are in fact used by only one Service, there are often good reasons for buying and storing these items under integrated managership in CONUS because of supplier relationships in the bulk buying of like items. These reasons do not always apply overseas.

5. The lesson learned is that the concept of common supply support is usually sound for selected items, but it cannot be imposed without considerable advanced planning both as to the items to be commonly supplied and the conditions and situation in the area concerned.

6. Although a phase-in period is desirable in implementing common supply, the system can begin functioning almost immediately for items such as subsistence.

BOARD FINDING NO. 11

Common supply of high-demand items used by elements of two or more Services can result in effective and economical supply support. The most profitable areas for the application of common supply support include subsistence, selected items of POL, and construction material. There is a need to develop criteria defining the commodities and conditions under which common supply support should be applied.

Q. POL

1. Petroleum products were among those handled in varying degrees under common supply concepts. When the U.S. effort in Vietnam was limited to military assistance and advisory

activities, POL was provided almost exclusively by the commercial concerns operating in-country and distributed throughout the area by subcontractors. With the commitment of major U.S. combat forces, fuel requirements exceeded commercial capabilities and military POL systems were established consistent with other logistic responsibilities.

2. POL support in Vietnam has been acknowledged to have been outstanding despite the adverse environmental conditions under which it was provided. POL was available to operating forces as required and, therefore, commanders of operating forces were not aware of any POL problems. However, problems did exist in the administration of POL support to forces operating in Vietnam. These problems were in areas of port facilities, transportation and distribution equipment, procurement inspection, accounting, contract administration, and of pilferage.

3. At the start of the buildup, POL storage was limited and ports were incapable of accepting deep-draft tankers. The increasing use by the oil industry of supertankers required costly transshipments by smaller tankers from Singapore and Japan. Movement of fuel from main storage areas in Vietnam to remote areas was by shallow-draft coastal shipping that was limited in capacity and, for the most part, made up of obsolescent craft. Once ashore, the products were delivered to the consumer by pipeline, tanker truck, air, and to a limited extent by rail in some locations such as the Saigon area. Although the problems encountered in developing and operating the POL system were numerous, they were not of a nature that affected combat operations.

4. With the deployment of major combat forces commencing in mid-1965, government purchase of bulk fuel was made offshore rather than on an as-needed basis from contractors in-country. On arrival in Vietnam, POL products were stored in whatever tankage was available—initially commercial, later both commercial and military. The continued, extensive use of commercial POL systems in providing support resulted in a dual storage and distribution system. Thus, for the first time in U.S. military history commercial oil concerns were used in a combat area to receive, store, and distribute Government-owned bulk petroleum stocks. This led to accounting and contract administration problems.

5. The commingling of military and commercial stocks, the complexities of distribution through a variety of commercial and Service-owned facilities, and the difficulties of issue documentation at consumer level created a situation in which it was practically impossible to track and accurately account for the transactions. As a consequence, reimbursement billings were understated and large paper losses occurred. The most publicized of these was the alleged \$21 million deficit in Air Force accounts in 1966-67. Substantial improvement was made in July 1968 when a Memorandum of Understanding was signed by the Services to account and reimburse for bulk POL issues on the basis of MACV Monthly Bulk Fuels Report, modified to include documented base-level issues and prorated handling losses. The agreement provided a vehicle for more accurate reimbursement and eliminated much of the uncertainty as to the disposition of stocks between the Services.

6. Administration of POL contracts in Vietnam has been less than satisfactory. Duplicate billing, improper pricing guides, inadequate controls, and inaccurate inventories were some of the problems that were manifest in the lack of an adequate capability in-country for contract administration. Although the Defense Fuel Supply Center (DFSC) indicated in each contract the Service responsibility for property administration, the responsibility was fragmented. For example, in some instances the Army and the Air Force were assigned some of the functions assigned to the Navy as the Procurement Quality Assurance Representative without relieving the Navy of these responsibilities. Additionally, the Property Administrator of the Services and the Quality Assurance Representative did not possess the necessary experience or staff to ensure that the provisions of the contracts were fulfilled. The complexity of the contracts further aggravated the problem of inexperience.

7. Although the designation of a MACV staff member as Contracting Officer's Representative had been requested by DFSC in 1968 and CINCPAC had requested the DFSC position on the assignment of a Contracting Officer's Representative in 1969, a qualified Contract Administrator or Contracting Officer's Representative had not been assigned as of 1 January 1970.

8. Much of the difficulty in administering contracts in Vietnam can be traced to ambiguities in DOD Directive 4140.25, Management of Petroleum Products, 6 January 1965, and the implementing instructions. It does not clearly state the relationship and responsibilities of the DSA/DFSC and other DOD activities as to the preeminent role of DSA/DFSC in contract administration for POL in overseas areas. The instructions were interpreted by DSA to mean that it must rely solely on Service agencies in overseas areas for POL contract administration and that it was enjoined from having adequate field representation in overseas areas. As a result of an unclear definition of responsibilities, many problems existed at lower levels and did not surface for authoritative resolution.

BOARD FINDING NO. 12

Because POL is so essential to support of military operations, the responsibilities of and interfaces between the military departments, the unified commands, and Defense Supply Agency/Defense Fuel Supply Center must be clearly defined so as to eliminate misunderstanding.

R. EXCESSES

1. During late 1967, after the buildup had been largely completed, materiel excesses in Vietnam began to attract serious attention. A quantitative assessment of excesses related to the Vietnam War is difficult to develop. The reports of the Pacific Utilization and Redistribution Agency (PURA) include the value of excesses not attributable to Vietnam operations. On the other hand, a large part of the excesses created by the war was not reportable to PURA. Furthermore, records of excesses are not available to cover the period from the commencement of the buildup to the initiation of PURA. Finally, the Services use different criteria for determining what part of their total stocks is excess.

2. In order to provide a means of gaining an appreciation of the magnitude of the excess problem during the Vietnam era, the Joint Logistics Review Board found it necessary to establish a definition of excesses and then to have each Service provide its best estimate of the total value of its excesses identified in the Pacific area and related to the Vietnam War. For this purpose, excesses were defined as the materiel and equipment shipped into Vietnam or into other Pacific bases for support of operations in Vietnam which subsequently became excess. However, it should be emphasized that the excesses thus defined are not necessarily excess to the worldwide requirement of the reporting Service or to the Department of Defense. This point is illustrated by the fact that the majority of excesses generated in Vietnam or the Pacific Area during the Vietnam War were subsequently utilized by the Department of Defense.

3. The Army identified property valued at \$532 million as excess to Vietnam requirements. Of this amount, \$284.1 million has been used to fill other requirements, \$73 million has gone to property disposal, and \$174.9 million is on hand and in process of screening for utilization. Another \$130.5 million of excesses, retrograded to Japan and Okinawa for identification because of a lack of space and capability in Vietnam, were subsequently shipped back to Vietnam to fill Army requirements. In addition, the Army reported 141,600 tons of construction material excesses.

4. The total value of PACOM excesses reported by the Navy as related to support of the Vietnam War was \$64.28 million. Of the amount, \$43.7 million was generated in Vietnam and the balance from Western Pacific stock points located at Guam, Subic Bay, and Yokosuka. Of the \$43.7 million, \$20.6 million had been redistributed by the end of 1969 to meet Navy requirements outside of Vietnam. Another \$5.2 million had been transferred to the other military services, \$0.2 million to other U. S. Government agencies, \$0.1 million to the forces of other countries, and \$2.7 million to property disposal.

5. The total value of Western Pacific area excesses reported by the Marine Corps as related to support of the Vietnam War was \$42.8 million as of 1 January 1970. Of this total,

\$7.6 million was generated in Vietnam and \$35.2 million was generated in Okinawa. Of the total, \$24.5 million has been redistributed to other military services in the Pacific area, other Government agencies (primarily CONUS integrated managers), and to satisfy Marine Corps requirements. Another \$8.7 million has been transferred to property disposal offices in the Pacific area and \$9.6 million remains in the PURA system, other screening cycles, and some not yet turned over to property disposal offices.

6. The Air Force has identified a total of \$384 million of excesses that was redistributed from SE Asia and Clark Air Force Base between FY 67 and FY 69. Of this total, \$192 million was redistributed through the Pacific Area Redistribution Center, \$9 million through PURA, and \$183 million was transferred to property disposal, including materiel worn out and no longer economically repairable. In addition to these totals, Headquarters, USAF, estimated that redistribution actions between air bases in SE Asia of materiel excess to local needs may have exceeded \$230 million during these fiscal years. The Air Force also reported that, as of 31 December 1969, \$75.1 million of potential excesses were on hand at SE Asia bases and Clark Air Base awaiting further screening and/or disposition. This \$75.1 million can be related to a total of \$334.4 million in warehouse stocks and \$560.5 million in-use equipment at the same bases.

7. There are two general categories of military excesses: those that are unavoidable owing to the contingencies of war and those that could be avoided or reduced. Unavoidable excesses include those excesses caused by changes in plans, policy, and the type of combat operations and changes in equipment to replace that which has become obsolete because of technological change. It must be recognized that unavoidable excesses will be generated during wartime and that they will occur regardless of the corrective action taken to prevent excesses.

8. The major causes of avoidable excesses that are reported by the Services may be identified as follows:

a. The lack of control on the movement of supplies into Vietnam during the buildup phase of 1965 through 1966 was a major cause of excesses. The large volume of supplies moved into Vietnam during the period caused an inundation of the capability of the theater to adequately receive and store the materiel.

b. The lack of a sufficient logistical base during the buildup contributed to excesses. There was a shortage of air terminals, port facilities, roads, and communications, as well as trained supply personnel, storage facilities, materials handling equipment, and computer equipment for accounting for supplies.

c. The uncontrolled shipment of supplies, coupled with the lack of an adequate logistical base in Vietnam, led to a bottleneck in the supply system. The time required to requisition and receive materiel was lengthened because of the bottleneck. Many requirements were requisitioned several times, and many requisitions were given a higher priority to enable air delivery. The subsequent shipment of the multiple requisitioned supplies placed an added burden on the overtaxed logistic system. The range and depth of stocks in Vietnam, which had been expanded to compensate for the extended order and ship time, exceeded the capability of effective management. This situation led to a loss of effective inventory management that was not resolved until inventories were completed (in some cases as late as 1968 and 1969) and effective automated supply accounting systems were installed by all the Services. Consequently, a major effort was directed toward the identification and redistribution of excesses and a reduction of inventory.

d. The use of a push supply system in the initial phase of a conflict caused some of the excesses. The contents of packages of materiel pushed to Vietnam were determined using consumption rates and other planning factors that proved to be unreliable in some instances. When actual consumption was less than planned consumption, excesses were generated.

e. A lack of effective restraint on consumer requisitioning allowed a proliferation of demands for supplies and materiel that were excess to actual requirements.

BOARD FINDING NO. 13

Major origins of excesses in SE Asia were the inability to accurately forecast requirements during the rapid buildup, often undisciplined and repetitive requisitions, and overtaxed and inadequate logistic management resources. Some unavoidable excesses were created by changes in operating decisions and by obsolescence of equipment. Steps must be taken to tailor logistic operations to those that can be reasonably performed in the combat area. Programs should be established to identify excesses as early as possible during the initial phase of a conflict and should continue throughout its duration. An effective system for the rapid redistribution of identified excesses should be available as soon as practicable.

S. CONTAINERIZATION

1. One new and important concept introduced into military logistic support in Vietnam was containerization. About 15 years before the decision in 1965 to commit major U.S. forces to Vietnam, the Army had started to develop a concept of utilizing a standard-sized container to give a semblance of automation to the movement of supplies through the overseas pipeline from CONUS stations and depots to overseas units and depots. The steel container called CONEX carried 5 short tons of cargo, was roughly a 7-foot cube, and was designed so that it could be carried on trucks and rail cars and could be handled by the general purpose, breakbulk, 5-ton capacity cargo gear on most ocean freighters.

2. The Army efforts in containerization originated with the port and supply problems in World War II and Korea and the advances made by the military and furthered by industry in unitization and palletization of cargo. All services stressed palletization. In addition to the Army and Air Force investments in CONEX containers, the Marines developed two standard-sized mount-out boxes for deploying forces; and the Air Force developed its 463-L system to handle palletized cargo in aircraft.

3. When the decision was reached in early 1965 to start the buildup in Vietnam, the Army and the Air Force jointly owned an inventory of almost 100,000 CONEX containers. Every major U.S. Army unit moving to the theater carried its accompanying spare parts and supplies in CONEXs. For example, the U.S. 1st Cavalry deployment included about 2500 containers all prominently marked with the big yellow patch.

4. Army Aviation units were already using CONEX containers with prebinned stockage of the myriad of small items—rivets, cotter pins, and nuts and bolts peculiar to aviation supply and utilized in large volume.

5. As the conflict escalated, there was more and more demand for CONEX containers, and eventually the theater inventory exceeded 150,000 of the total 200,000 units then owned by the Army and Air Force.

6. The 150,000 units retained in-theater represented about 6 million square feet of covered storage. This figure is impressive when it is compared to the total of about 11 million square feet of covered storage constructed in the entire theater by the middle of CY 69—4 years after the initiation of major buildup.

7. Few of the CONEXs moved into the theater ever returned. This does not suggest that all were utilized for storage of supplies. An empty CONEX was 295 cubic feet of covered storage. When other facilities were not available, CONEXs, in addition to providing for covered storage of supplies, provided interim facilities for dispensaries, command posts, PXs, and bunkers, and for a wide variety of similar functions.

8. CONEXs were also an integral part of a special endeavor to provide Cam Ranh Bay with an enhanced capability when the decision was reached to make that installation a major U.S. Army supply base. As in most locations in Vietnam, the construction of depot facilities did not keep pace with the influx of supplies and equipment. It was estimated in January 1966

that by the end of June 1966 the Cam Ranh Bay depot would be supporting a force of 95,000 men. In an effort to overcome the lack of facilities, the Army Materiel Command prepared a pre-packaged depot, in effect, containing a 60-day stockage level of repair parts for all units supported by the depot at Cam Ranh Bay. When completed, the entire package of about 53,000 line items was contained in 70 military van semitrailers and 437 binned CONEX containers—together with a library of manuals, stock records, locator cards, and other documentation. This concept represented container-oriented logistics in a sophisticated form. The movement of a section of a depot intact from the United States to Vietnam was a good example of the integration of supply and transportation systems. The project packages arrived at Cam Ranh Bay on 21 May 1966, and a total of 13,538 material release orders was issued during the first 10 days of operation with only 26 warehouse denials—less than 0.2 percent.

9. The next step forward in utilization of intermodal containers in support of operations in Vietnam was the introduction of Sea Land Services, Inc., contractual container ship support.

10. In 1966 Sea Land began providing container service to the Army on Okinawa. Sea Land container support was extended to provide service to the Navy at Subic Bay in the Philippines. Finally, in 1967 Sea Land container service was introduced into Vietnam. The success of container ship operations into SE Asia for general cargo and perishable subsistence was endorsed by every command with an interest in support of U.S. forces in Vietnam.

11. Ammunition has also been successfully handled in container ship service most recently. During December 1969 and January 1970, a test was conducted of the feasibility of shipping ammunition from the United States to Vietnam utilizing container ship service. A self-sustaining container ship was used in the test to move 226 containers of ammunition from the United States to Cam Ranh Bay. Some of the containers were unloaded in the ammunition depot at Cam Ranh Bay; others were transhipped on lighterage to Qui Nhon and on to forward supply points. The test was such a complete success that the 1st Logistical Command recommended the initiation of regularly scheduled ammunition resupply in container ships to reduce order and ship time with attendant savings in pipeline inventory. In addition, the 1st Logistical Command indicated that such action could lead to the phasing down of the ammunition depot at Qui Nhon, a particularly vulnerable depot that had been subjected to innumerable enemy attacks from the surrounding hills. Total losses of ammunition from enemy attacks at Qui Nhon are the heaviest in all of Vietnam and are estimated to be in the millions of dollars.

12. Experience with large intermodal containers in Vietnam clearly indicates that full exploitation can have as revolutionary an impact upon military shore-based logistics as it has had on commercial shipping. Among the major logistic problems encountered in moving supplies to Vietnam were the following:

- a. Lack of personnel and facilities to discharge ships
- b. Lack of depot facilities and experienced personnel to warehouse supplies
- c. Loss, damage, and theft of cargo and deterioration of supplies stored in the open
- d. Problems in identifying cargo
- e. Difficulty in translating cargo documentation into inventory records
- f. Inability to effectively ship directly from CONUS source to major user without passing through intermediate theater and in-country supply echelons.

13. Each of these problem areas can be significantly alleviated by proper systems application of containerization. For example:

- a. Container ships can be discharged 7 to 10 times faster than break-bulk ships with fewer personnel on each shift. Drastic reductions in berthing space and in port operating personnel result.

b. The practicality of operating directly out of containers prebinned in the United States was demonstrated at Cam Ranh Bay.

c. All recipients of containerized cargo were enthusiastic about reduction in loss and damage—particularly for ammunition, perishable cargo, and PX supplies.

d. Because cargo is moved intact in a container from the CONUS to the depot or directly to a forward unit, problems in sorting and identifying cargoes are minimized.

e. The Cam Ranh Bay operation proved that cards prepunched in the United States and covering the contents of a container can speed up the documentation of assets and reduce errors in inventory and locator records.

f. The shipment of containerized ammunition loaded inland in the CONUS and shipped directly to forward ammunition supply points at An Khe, Pleiku, and Ban Me Thout was extremely successful. There was no difficulty in unloading operations and the cargo was in better overall condition than any ammunition previously received in Vietnam.

14. Although there was no significant use of intermodal containers for air movements to Vietnam, the lessons learned in surface movements are also applicable to air movements. The record is clear. Intermodal containers can substantially improve and simplify logistic operations. Systems and procedures must be developed to maximize these advantages.

BOARD FINDING NO. 14

Containerization offers the Services a major opportunity for a breakthrough in simplifying and speeding logistic support to deployed forces. Therefore, the use of containers should be developed and exploited as rapidly as possible.

T. CONCEPTS FOR FUTURE LOGISTIC SUPPORT IN THE COMBAT AREA

1. The JLRB has concluded, as others have concluded, that logistic support of U. S. combat forces in SE Asia during the Vietnam era was effective, but that the efficiency, and hence the economy, of that support could have been improved. Inadequate control of shipments, congestion at seaports and air terminals, unidentified materiel in storage yards, inaccuracy of inventory records, deterioration of supplies in open storage, and identified excesses all indicate that substantial improvements in efficiency and economy must be made in the conduct of logistic operations in a combat area.

2. It is generally agreed that the major causes of logistical inefficiency during Vietnam were:

a. The conduct of complex logistic operations overseas with the limited or nonexistent facilities inherent to an undeveloped country.

b. Inadequate numbers of trained logistic personnel and units.

c. The failure to limit the introduction of supplies to the throughput capacity of the ports, depots, and bases.

3. The necessity for movement control agencies to regulate the flow of materiel into the theater has already been addressed, but movement control treats the symptoms rather than root causes of the problem. The fundamental cause of inefficiency is shortage of logistic resources in the form of personnel and facilities. Although some adjustments in priority are practical to expedite the provision of necessary logistic support facilities and some steps can be taken to improve the situation in logistical units and personnel (the JLRB has made some recommendations in these areas), the hard fact is that logistic resources will always be severely taxed.

4. In searching for a way to remedy the shortage of logistic resources it is to be noted that there are two factors that dominate the determination of logistical efficiency: one is the requirement, the other is the capability. If the capability must be less than desired, then attention should be directed toward reducing the requirement for logistical support. Reductions in requirements must, of course, be achieved without impairing the effectiveness of support to combat units. There are clear indications that logistical requirements can be substantially reduced and that, concurrently, the effectiveness of support maintained and even improved.

5. Logisticians have always directed maximum effort toward meeting every requirement for responsive support to combat units. The result has sometimes been generation of logistic requirements without full realization of the impact on logistic resources in the combat area. It is time now to find ways to maintain responsive support and at the same time "minimize the requirement for logistic resources in the area of conflict."

BOARD FINDING NO. 15

Available techniques must be aggressively pursued to reduce the requirement for logistic resources in the combat area without a reduction of operational capability.

SECTION A
RESPONSIVE LOGISTIC PLANNING

BOARD FINDING NO. 1

The planning system of the Department of Defense must provide for (1) a realistic appraisal of logistic resources to achieve balance between operational concepts and logistic capabilities; (2) the establishment of credible requirements for critical logistic resources; and (3) recognition in the Planning, Programming, and Budgeting System of the impact of inadequate logistic resources on operational capabilities.

1. Logistic planning is an iterative process in which a proposed operational course of action is evaluated with respect to available resources. In identifying available resources, consideration must be given not only to material in the hands of operating forces and under procurement, but also to material held in the reserve stocks. The Board had some difficulty with the multitude of definitions used to identify logistic resources, especially war reserves. At least 28 terms are currently used within the Department of Defense to describe war reserves. To simplify this problem of identification, the Board found it helpful to redefine all war reserves in terms of one of three categories:

a. Force Structure War Reserves: Those material reserves authorized by the Secretary of Defense for the support of, and based upon the composition of, the Approved Forces shown in the Five Year Defense Program (FYDP).

b. Special Contingency War Reserves: Those material reserves authorized, procured, and maintained to support unique requirements identified by logistic appraisal of specific operation plans and are not contained in or justified by the composition of the approved force structure.

c. Economic Retention War Reserves: Those assets of war reserve materiel on hand that are excess to levels approved for procurement by the Secretary of Defense and that can be held economically against some plausible future requirements.

2. Categories such as these could be adopted without preventing the military services and military departments from using other breakdowns and subdivisions as are deemed desirable for meeting their own special needs of command and management.

3. When critical resources are inadequate, two steps are required to complete the cycle:

a. Operational planners should be alerted to logistic deficiencies so that proposed operational concepts can be modified to accord with the logistic constraints.

b. The Planning, Programming, and Budgeting System should be alerted to address the shortage and to program the acquisition of additional resources.

4. As the result of assessment through the Planning, Programming, and Budgeting System of the requirement for additional resources, the FYDP may be modified to program additional resources. The time-phased availability of additional resources requires a reappraisal and modification of the operational plan to take advantage of the additional logistic resources.

5. As the resources and concepts of operation change, the process of evaluation, program changes, and readjustments in operational plans begins again.

6. The difficulty with the planning cycle just described originates in the multiplicity of plans. For example, the Joint Chiefs of Staff currently monitor almost 300 contingency plans, each requiring several echelons of supporting plans in unified, specified, and Service command channels. Many plans are interdependent and reconciliation is a tedious and time-consuming task. The whole planning base undergoes continuous change as logistic requirements for contingency plans are used to define resource deficits in the Planning, Programming, and Budgeting System, and as plans are subsequently adjusted to the evolving asset position. A plan rarely goes through a complete cycle with full authoritative modification of the operational concept to accommodate logistic constraints and with authoritative consideration in the Planning, Programming, and Budgeting System of requirements for additional logistic resources.

7. Although acknowledgment of the impacts of logistic constraints and the establishment of credible logistic requirements are equally important in the planning cycle, the establishment of credible assets should receive priority attention for the following reasons:

- a. An improved asset position in logistics means a broader base for support to operations.
- b. More time is needed to acquire logistic resources than to impose controls for adapting operations to logistic capabilities.
- c. Shortfalls in logistic resources will eventually impact on operations, and controls will then be established even though the requirement had not been anticipated.

8. The difficulty in establishing credible logistic requirements stems not only from constant changes in the planning matrix but also, and perhaps more importantly, from the magnitude of and the lack of stability in gross requirements to support all contingency plans. Hard-core requirements tend to be obscured by relatively soft total requirements. To correct this situation, certain plans should be designated and utilized as the basis for determination of hard-core logistic requirements. These requirements should be introduced into the Planning, Programming, and Budgeting System and funded or deferred in accordance with policy decisions that reflect current political, military, and economic considerations.

9. Since most logistic problems are fundamentally the same, a limited number of plans can be designated as the basis for establishing hard-core logistic requirements in contingencies other than nuclear war. Furthermore, all planning is modified as the situation develops. From the point of view of logistic preparedness, the value of a plan lies not so much in its degree of explicitness, but rather in its accurate assessment of the situation, its success in obtaining the necessary resources, and its adaptability to changes in the situation.

10. The Joint Chiefs of Staff have recognized the need for structuring the planning system to identify plans that should be given priority attention and developed in detail. The proposed Joint Operation Planning System is designed to limit the number of plans that will have complete logistic annexes and be given a full logistic appraisal. The criteria for selection include those plans that are likely to be implemented during the Joint Strategic Capabilities Plan time frame, as well as those plans that if individually implemented, would tax total available manpower, logistic, and mobility resources.

11. The Joint Operation Planning System will strengthen operational readiness by concentrating limited planning resources on more important plans with provision for full logistic appraisal. Although the logistic appraisals will identify the Service's logistic shortfalls for each plan, it appears that gross requirements, even for those plans meeting the criteria, will not be within the funding resources likely to be made available. In this situation, resources actually programmed would result from individual recommendations and decisions, rather than from a coordinated approach to ensure that limited resources are most effectively applied.

12. The Joint Logistics Review Board (JLRB) believes that the Joint Operation Planning System proposal will strengthen the planning function because a small number of plans will be identified as a package for establishing hard-core, firmly recognized critical logistic requirements. These requirements may then be compared to available or programmed assets to identify critical

shortfalls. The military departments may address these shortfalls through the Planning, Programming, and Budgeting System, but, because of the means by which these shortfalls are identified, the military departments, the Joint Chiefs of Staff, and the Office of the Secretary of Defense will be making recommendations or decisions within a specific framework.

13. Identifying a hard core of logistic requirements for the package of operation plans will not prevent introduction of unique requirements for other individual plans into the Planning, Programming, and Budgeting System. Moreover, all hard-core requirements need not be programmed before certain unique requirements. The decisionmaking process, however, will be stratified so that the actual asset position of the Department of Defense can be measured against a finite target rather than against the open-ended and unattainable requirements aggregated from a multiplicity of plans in various stages of development and appraisal.

14. The preceding paragraphs have outlined means to strengthen procedures in planning selection of a portfolio of plans for full logistic development and evaluation, and designation within the portfolio of a package of plans will provide a uniform basis for establishment of hard-core logistic requirements. In addition to stressing establishment of credible requirements for logistic resources, effective planning alerts commanders to the need for establishing controls when operations must be brought into balance with available logistic resources. These and other aspects of logistic planning are covered in the monograph.

15. The Board has made the following recommendations:

(LP-2) The Joint Chiefs of Staff, in coordination with the Services, expedite the implementation of the proposed procedures currently under development in the Joint Operation Planning System.

(LP-3) The Joint Chiefs of Staff and the Services use those contingency plans, designated as complete plans, as follows:

(a) The critical shortfalls identified in those complete operation plans designated to undergo an Operations Plan Package Appraisal to determine logistic supportability should be validated as credible hard-core Special Contingency War Reserve Requirements. These requirements would be additive to the total Force Structure War Reserve Requirements and be recognized by the Department of Defense in the Planning, Programming, and Budgeting System. If the economic or political situation or higher Service priorities preclude funding, then the requirement should remain valid until satisfied.

(b) The logistic requirements of those complete operation plans that are not in the designated package will be compared with logistic assets, on hand or programmed, to establish additional Special Contingency War Reserve requirements that should also be considered for additional support under the Planning, Programming, and Budgeting System.

SECTION B
EARLY MANAGEMENT CAPABILITY

BOARD FINDING NO. 2

A component commander required to furnish major logistic support to ground forces in a contingency operation must be provided with a logistic management capability, vested in an officer whose rank and logistic experience are appropriate to the ultimate scope of the logistic operation. This senior logistician and his staff must participate in prior planning for contingency operations and be deployed to the area concurrently with the forward echelon of the headquarters of the combat forces.

1. The logistic support of forces engaged in combat operations is an extremely expensive function of utmost importance. The success or failure of logistic operations may well determine the outcome of the combat operation. It deserves the best possible management and continuity from the beginning.
2. During the Vietnam era, the overall strength of the Army was rapidly increased by over 50 percent without benefit of a callup of the Reserve forces, which had been expected to flesh out the combat service support portion of the Army force structure. At the same time, the scale of Army operations in the combat zone changed at a far greater relative rate than that of the other Services.
3. To meet the increased logistic requirements, the Army did not have the capability to provide the required numbers of skilled logistic personnel at the lower and middle levels of its logistic management operations in Vietnam. This shortage of resources and skills accentuates the need for the best possible top-level management.
4. When there is a strong possibility that Army forces will be deployed in a contingency operation, the Army should designate a top-level logistician as prospective commander of the in-country logistic effort. This officer should have a broad background in large-scale logistic support operations and be of sufficient rank to command the largest Army logistic management organization that may be required during the operation. The Commander should be introduced during the early planning phases and should be located as close to the area of operations as possible—preferably in it. In order to provide for the required degree of continuity during the buildup period, the commander should not be replaced until the situation has become relatively stable. The logistic commander should be provided with a nucleus staff at the beginning, and this staff should be expanded as required.
5. The Board has made the following recommendation:

(SM-25) Army plans provide that when a contingency operation appears imminent an experienced logistic commander with rank appropriate to the anticipated scope of operations will be designated. He should be provided a nucleus staff and both should be located with the headquarters of the prospective operation or as near as possible.

Preceding page blank

SECTION C

FORCE STRUCTURE

BOARD FINDING NO. 3

The force structure of the active duty components of the Armed Forces must be designed to permit adequate logistic support of ready forces in quick reaction to emergency situations. During peacetime, emphasis was in some cases placed on the maintenance of combat and combat support forces without adequate combat service support units and trained technical personnel. As a consequence, when contingency operations are undertaken and the Reserves are not called up, serious deficiencies in logistic units and trained logistic personnel may be expected. There is a need, therefore, to enhance readiness to respond promptly to limited war of scope comparable to the Vietnam conflict without reliance on national mobilization or callup of Reserves to conduct logistic operations.

1. Several monographs of this report give a great deal of attention to the absence of a general Reserve callup during the Vietnam era. In July 1965, when President Johnson announced the deployment of substantial numbers of U.S. combat troops to Vietnam, he indicated that it would be unnecessary to call up Reserve forces. In the following month, the Secretary of Defense amplified the President's announcement by stating that the Administration planned to meet personnel requirements for Vietnam by increasing the size and numbers of active units in the active forces and by a limited extension of service that would be applicable only to the Navy.
2. From its review, the Joint Logistics Review Board has concluded that the personnel goals outlined by the President and the Secretary of Defense were achieved. Military logistic personnel ceilings, both in terms of overall service size and in terms of personnel deployed in-country, were generally adequate during the Vietnam era, and authorized increases were numerically responsive to mission and task assignments.
3. The foregoing conclusion gives rise to the question as to what the concern is over the absence of a Reserve callup. The answer lies in the timing of the personnel augmentations, not in their size. Authorized ceiling increases lagged in time behind the requirement for specific personnel skills—a requirement generated by the rapid expansion of the logistic support base in Vietnam. The decision not to call up Reserve forces denied the Services access to an immediate source of manpower skills; compensatory increases in numbers alone did not allow for adequate lead time for the Services to plan for, procure, and train logistical personnel in specialized skill categories so as to permit prompt and adequate response to the Vietnam buildup. This situation was further aggravated by the necessity for maintaining a balance between Vietnam and non-Vietnam logistical personnel requirements where skills were in short supply.
4. The personnel problem described here appears as a recurring theme in several monographs, e.g., maintenance, POL, transportation, and supply management. From this experience, it is possible to draw two important conclusions. First, in the day-to-day operations of the peacetime military establishment there is no need for many of the specialized logistical skills that become so critical during the initial phases of a contingency operation. Second, if the Services are to be able to respond quickly, effectively, and efficiently to an emergency situation, they must find a way to gain access to critical logistical skills without relying on a general mobilization of Reserve forces. The following steps outline one way of coping with this problem:
 - a. The Vietnam experience should be carefully examined for the purpose of identifying those specialized skills that were required during the Vietnam buildup but were not available in adequate scope and numbers in the Active Forces.

b. Personnel should be identified—to the maximum extent practicable in the Active Forces, otherwise in the Reserve forces—who possess specialized logistical skills of the type needed during a contingency operation.

c. Personnel manning policies in the military services should be adapted so that individuals with specialized skills, although in general assignments, can be used as a partial means of filling voids in the force structure during the initial phase of a contingency operation.

d. Sufficient personnel spaces should be provided in the CONUS part of the logistic system of each Service to ensure an adequate nucleus of personnel trained in the critical skills.

5. These steps are not presented as a recommended solution to manpower shortages in a contingency situation, but rather to indicate a general approach to the problem. The specific details of corrective action in this area should be developed as a result of a comprehensive review of the post-Vietnam force structure.

6. The Board has made the following recommendation:

(MP-3) The Services develop and initiate plans and policies for restructuring the Active Forces to the extent necessary to provide the highly specialized, long-lead-time logistical personnel to meet requirements imposed by contingency plans.

SECTION D
AMMUNITION

BOARD FINDING NO. 4

Procurement and production of an ammunition item involving large volume, extensive noncommercial facilities, high costs, and multiple users should be assigned to one of the primary users of that particular munition or related group of munitions.

1. In some instances, the current assignments of single Service management responsibilities for procurement and production of ammunition have proved to be notably effective and have resulted in a responsive performance and a streamlining of the entire procurement and production process. A good example is explosives, totally assigned to the Army with the exception of one small bulk and pilot production facility maintained by the Navy. The homogeneity of both the material and the process associated with the production of explosives, and the fact that it meets all the essential criteria for single Service assignment contained in Department of Defense Instruction 4115.1, are major contributing causes to the demonstrated effectiveness of its performance and the absence of evolved capabilities in the other Services. Other examples of effective assignments based on a similar rationale and experience are grenades and chemical and biological fillers, also totally assigned to the Army.
2. One obvious candidate for centralized management is general purpose bomb production. These bombs are used extensively by the Navy and Air Force with Navy requirements produced by Navy facilities and Navy contracts and Air Force requirements produced by the Army under Military Interdepartmental Procurement Requests (MIPRs) from the Air Force. Consolidation of production responsibility under the Navy is logical with transfer of Army owned and managed facilities to the Navy. Other consolidations under single service or joint managership should be investigated.
3. Although no insurmountable problems resulted during the Vietnam era from existing procurement assignments, it is evident that reduction in the number of agencies procuring like or closely related items should result in increased efficiency, lower costs, and a minimum requirement for high-level coordination. Single Service assignments for procurement and production of munitions should be related in a logical manner to the users of the munitions without compromising service responsibilities for determination of requirements and their own research and development.
4. The Board has made the following recommendation:

(AM-14) The military departments initiate a joint review of ammunition procurement and production responsibilities for purposes of recommending changes to Department of Defense Instruction 4115.1, including adjustments in existing capability through transfer of facilities as required. Action be taken to consolidate general-purpose bomb responsibilities under the Navy, removing the Army from involvement in an item it does not employ. Other items that should be reviewed to determine the feasibility of single Service assignment are incendiary bombs, projectile fuzes, explosives, and small arms ammunition.

SECTION E
TRANSPORTATION

BOARD FINDING NO. 5

An adequate transportation capability, with a proper balance between sealift and airlift resources, is essential to the deployment and successful support of forces deployed in an overseas area. Since the bulk of materiel must be transported by surface means, an adequate and responsive sealift must be in-being. Such a capability is dependent on a modernized Military Sea Transportation Service nucleus fleet backed by access to the resources of an equally modern U.S. merchant marine. A responsive and adequate airlift must be available to support initial deployments, to provide for follow-on movement of personnel, items designated for normal movement by airlift, and for high-priority materiel. The growing capability of U.S. civilian and military airlift emphasizes that the Services must develop and test boldly engineered logistic systems to exploit the advantages inherent in this mode of transportation.

1. Although sealift requirements were met during the Vietnam era, the obsolescence of the Military Sea Transportation Service (MSTS) nucleus fleet, the dwindling assets of the National Defense Reserve Fleet, and the limited availability of modern ships with defense features in the U.S. merchant marine accentuate the need for a vigorous program that will modernize the MSTS nucleus fleet and provide for responsive augmentation from the commercial shipping industry. The nonavailability of sufficient ships from the active U.S. merchant marine to augment the MSTS nucleus fleet required the activation of ships from the National Defense Reserve Fleet (NDRF). Because of age and obsolescence, however, the NDRF is a dwindling asset and will not be readily available to augment the nucleus fleet beyond 1978.

2. A nucleus sealift fleet within the Department of Defense is needed to:

- a. Act as a positive resource that can be used early in any contingency operation while provisions are being made for augmentation from the U.S. merchant marine or other sources.
- b. Provide responsive peacetime service to remote areas that are not on established commercial trade routes.
- c. Ensure needed support during labor disputes.

3. These requirements must be examined against the current environment in the maritime industry. Owners of modern fleets are embracing containerization at a rapid rate. These companies are concentrating on conversion to fully containerized operations over established trade routes with nonself-sustaining container ships. This trend is yielding less and less business for the older break-bulk ships. The shortage of heavy-lift and roll-on-roll-off shipping, needed during the first stages of a deployment operation to move wheeled and tracked vehicles and other heavy and outsized equipment, is expected to continue. Although some new heavy-lift and roll-on-roll-off shipping is available in the U.S. merchant marine, capacity is insufficient to satisfy DOD requirements during emergency periods. An overall deficit in capacity during the initial phases of an operation will also exist because of the inability to requisition ships.

4. Unless the MSTS nucleus fleet is modernized with sufficient numbers of an appropriate mix of ships, there will be no capability to move containerized cargo to a contingency operation for up to as much as the first 6 months of an operation, and insufficient capacity to move unit equipment and heavy-lift cargo. The mix should include barge-carrying ships, medium-sized container ships, "handy-sized" tankers, and multipurpose ships. The latter are self-sustaining ships

with very heavy-lift capability that can carry aircraft in a flyaway condition, outsized cargo such as lighters, wheeled and tracked vehicles, containers (including reefer containers), and unitized and breakbulk cargo.

5. One means of modernizing the MSTS nucleus fleet is through the use of a long-term build and charter program. Although proposed legislation has been forwarded, Congress has not yet given DOD authority to charter ships for periods in excess of 5 years. A long-term build and charter program offers a means of promptly initiating the required modernization program with a relatively small annual expenditure of funds.

6. The President's proposed program for support of the U.S. merchant marine is only a partial solution to the potential shortage of commercial ships for the movement of military cargo in an emergency. In order for the merchant marine to be a responsive source of military sealift augmentation in future contingency operations, there should be positive provision in the construction of new merchant ships for the determination, incorporation, and funding of national defense features such as design compatibility for the addition in an emergency of gantry cranes to nonself-sustaining container ships. If necessary, the Department of Defense should fund for this portion of the U.S. Merchant Marine Program. For future emergencies there must be provisions for ensuring U.S. commercial shipping responsiveness to Department of Defense requirements to augment the MSTS nucleus fleet.

7. Although primary reliance for logistic support of a military force deployed in an overseas area will continue to be placed on sealift, the Services must be prepared to use far greater amounts of air transportation in their intertheater logistics operations in furtherance of the principles of minimum echelons of supply and reduced stockage in the combat area. The addition of the C-5 will result in a significant increase in the capability of the military airlift fleet. A single C-5 can do the work of three to four C-141 jet transports, and the 212,800 short tons airlifted to Vietnam in 1968 could have been moved in the same time frame with only 28 operational C-5 aircraft in the pipeline to Vietnam. In addition to the increase in the capacity of the organic military airlift fleet, commercial airlines will also greatly expand their cargo capacity when they add jumbo jet aircraft to their air freight operations.

8. Airlift has already proved its value for the movement of high-value, critically needed items. With these increases in heavy airlift capacity expected in the near future, it will become even more valuable—provided it is properly utilized.

9. The Services already have studies related to the C-5 and increased utilization of airlift well underway. As logistic support concepts change and more and more items are routinely moved by air, the major limiting factor that can be foreseen is how well the packaging, handling, and flow of material into and beyond the airlift system is managed. Adequate ground handling facilities to cope with the increased tonnages envisioned do not exist, and a revision of the Services' logistic support systems is necessary if the increased airlift capability made available by the C-5 is to be used with effectiveness and economy.

10. The Board has made the following recommendations:

(TR-11) The Joint Chiefs of Staff determine the numbers of multipurpose ships, medium-sized container ships, barge-carrying ships, and handy-sized tankers which must be in the Military Sea Transportation Service fleet to provide peacetime sealift support to U.S. forces and to meet surge requirements for contingency operations until such time as additional shipping support can be mobilized and made operational.

(TR-10) The Secretary of Defense support necessary legislation to authorize long-term build and charter commitments so that the multipurpose ships and handy-sized tankers now in the Five Year Defense Program (FYDP) as the initial increment of the Military Sea Transportation Service fleet modernization program may be constructed by commercial interests and chartered to the Military Sea Transportation Service.

(TR-13) The Secretary of Defense seek to have the legislation stemming from the President's Merchant Marine Program include positive provision for ensuring the responsiveness of modern U.S. flag merchant ships, with appropriate national defense features, to meet military requirements under various conditions of emergency.

(TR-19) The Services actively pursue and complete ongoing studies concerning the revision of Service logistic systems in order that logistic support is provided effectively and economically and is consistent with the advantages provided by the C-5 airlift capability.¹

¹There are additional recommendations concerning airlift capability in other portions of this report—the Transportation, Supply Management, Containerization, and Maintenance monographs, and Section O of this volume, "Concepts for Future Logistic Support in the Combat Area"—which emphasize the need for a revision of supply and distribution concepts pertaining to air eligibility criteria, priorities for air shipment, and the development of procedures and equipment for air terminals.

SECTION F

JOINT LOGISTIC RESPONSIBILITIES

BOARD FINDING NO. 6

Although the basic responsibility for the support and maintenance of forces must remain with the Services, unified commands must plan for and be staffed for active involvement, when required, in the multiservice aspects of transportation and movement control, construction, ammunition and petroleum resupply, communications, medical evacuation and hospitalization, and control of critical items.

1. The responsibilities of the military departments and services for the logistic support and maintenance of their forces are essential to ensuring the readiness and performance of these forces wherever assigned and providing for continuing support by the total logistic systems of the Service concerned. This support, which is exercised through the components of the unified commanders to whom the forces are assigned, requires coordination by the latter. Emergency situations inevitably create serious problems in utilization, allocation, and establishment of priorities for logistic resources, e.g., the acquisition of real estate, distribution of manpower, coordination of the construction effort, movement control and allocation of assigned transportation resources, and the allocation of items in short supply. In his report on the war in Vietnam, Admiral U.S. Grant Sharp, the Commander in Chief, Pacific, stated:

"The war in Vietnam fostered a gradual change in the character of logistics management at the Headquarters of the Commander in Chief, Pacific. Far greater emphasis was placed upon the control of transportation assets, munitions resupply, construction programs, and critical items. It became apparent that the Unified Commander must control the allocation of limited services and materiel to those inter-Service theater needs of highest priority."

2. In order for the commander of a unified command to meet his logistic responsibilities as assigned by JCS Publication 2, he must have an adequate logistics staff and be prepared to exercise directive authority as required in such areas as transportation, communications, common supply, construction, ammunition and petroleum resupply, hospitalization and evacuation, and the control of critical items. His authority and direction will be required when two or more Services within his command are claimants for limited logistic services or resources. He must anticipate this need for direction and be prepared to provide it.

3. Procedures and movement control organizations must be established in the command to control the flow of materiel into an area of operations at a level commensurate with area throughput capability, lift capabilities, and command requirements. The unified command must also be prepared to establish priorities for the use of transportation.

4. The development of integrated communications systems that are responsive to the overall needs of the command requires centralized control of the design of the system for the combat area. This can best be done at the unified command level.

5. A construction program that is truly responsive to the needs of the command as a whole requires centralized control within the unified command. This control by the unified command should include the coordination and control of acquisition, storage, and allocation of construction material.

6. Ammunition and petroleum resupply are often critical considerations that may affect the command's ability to perform its mission. The unified command must be prepared to allocate

and control distribution within the command of these and other items for which demand may exceed availability.

7. A system of common supply for certain items will often improve the efficiency and responsiveness of logistic support and reduce the command's overall logistic workload. The unified command must include assignment of common supply responsibilities in the planning phase and monitor the execution of common supply operations.

8. Finally, the unified command must also ensure the provision of adequate medical services throughout the command and make recommendations concerning theater hospitalization and evacuation policy.

9. The Board has made the following recommendations:

In peacetime unified command staffs should have a nucleus capability, which can be expanded in time of emergency, to assist the commander in the exercise of his directive authority in the field of logistics. Specific recommendations that define the role of the joint commander in the functional areas of Construction and Common Supply are found in Sections H and K, Part II, respectively, in this volume. Other specific recommendations are:

(TR-48) Each commander of a unified command review his organization for movement control and coordination and, where necessary, revise his organization to incorporate agencies and procedures similar to those in the Pacific Command to limit the flow of material to a level commensurate with throughput capability, lift capabilities, and command requirements. Coordination and control procedures and a nucleus staff for these agencies should be activated and maintained in peacetime.

(AM-4) Commanders with ammunition logistic responsibility in time of war retain a nucleus staff capability in peace and the Services plan to augment key staffs with qualified ammunition logisticians promptly at the start of a contingency.

SECTION G
FOREIGN ASSISTANCE

BOARD FINDING NO. 7

U.S. foreign assistance activities require coordination at the interdepartmental level during planning for and execution of military contingency operations, whether or not U.S. combat forces are deployed. During the planning process, it is especially important to define clearly the responsibilities for and the relationships between military and civilian activities.

1. The United States has provided extensive materiel support to Vietnam through major civil assistance and nation-building programs. The uncoordinated importation of civilian materiel inevitably had an impact on some facets of the military logistic effort in support of U.S. and other Free World Military Assistance Forces, and on military assistance provided to the Vietnamese Armed Forces. An example of the difficulties encountered was competition for some logistic resources, such as port offloading and staging capabilities in Saigon. This problem was further complicated by uncontrolled ship arrivals. In prior wars of major proportion, coordination had been facilitated by the assignment of civil affairs responsibilities to the military; in the Vietnam War these responsibilities remained in the Agency for International Development. Experiences in this conflict have highlighted the need for special emphasis on coordination, beginning in the planning phase, when there is to be a major civilian effort in addition to that of the military.
2. The National Security Council is the agency to which requests for broad policy guidance in the field of civil affairs operations are submitted.² Use of the National Security Council System to define basic departmental responsibilities and relationships (the adjustment of these dependent on the nature of the contingency) and to ensure consistent planning assumptions should provide a sound basis for preparation by the Department of State and the Department of Defense of plans that adequately address the coordination of foreign assistance activity with envisioned military operations. The result will be better and more responsive contingency plans and significantly reduced requirements for ad hoc coordination decisions should a plan be implemented.
3. At present, Vietnamization and National Development programs developed under the direction of the National Security Council System are being implemented. To date, Vietnamization has involved a large turnover of military materiel and facilities to the Republic of Vietnam Armed Forces. Additional assets are available that might better be applied in National Development programs. There is a continuing need for coordination between the Agency for International Development and the Department of Defense in determining the distribution of available assets and providing for long-term support of the assets turned over to the Vietnamese.
4. The Board has made the following recommendations:
 - (FA-1) The Secretary of Defense recommend to the Secretary of State that contingency operation interface requirements be introduced into the National Security Council System for study and resolution, with a view toward making a clear determination and assignment of areas of interdepartmental responsibilities.
 - (FA-2) The Secretary of Defense recommend to the Secretary of State that the areas listed below be introduced into the National Security Council System for study and resolution.

² Joint Chiefs of Staff, Publication 2, Unified Action Armed Forces (UNAAF), paragraph 40708c.

(a) Definition and assignment of contingency planning requirements, contingency operations responsibility, and basic planning assumptions to involved U.S. Government departments and agencies.

(b) Examination of the precedents of the Vietnam conflict to ensure that planning requirements are fully defined and that realistic planning assumptions are employed in connection with enhanced military assistance and supporting civil assistance to the host government and allied forces involved in contingency operations.

(c) Consideration of the advantages to be gained by the establishment of an advanced "management system that includes: the definition of objectives and programs for United States Foreign Assistance; the development of quantitative indicators of progress toward these objectives; the orderly consideration of alternative means for accomplishing such objectives; and the adoption of methods for comparing actual results of programs and projects with those anticipated when they were undertaken."³

³Quoted from The Foreign Assistance Act of 1961, as amended, Art. 621A.

SECTION H

CONSTRUCTION

BOARD FINDING NO. 8

The planning and implementation of construction programs related to contingency operations should incorporate:

- a. Service development of construction requirements
- b. Centralized in-country coordination and control of construction at the unified command level
- c. Planning, programming, and funding procedures tailored to an emergency situation
- d. The use of preengineered, prefabricated, relocatable facilities as a means of improving construction responsiveness and reducing the construction effort.

1. The Joint Chiefs of Staff have taken important steps toward improving construction support for contingency operations by publishing instructions on base development planning in support of joint contingency operations⁴ and by establishing a Joint Staff/Service Construction Board. The instructions on planning provide that the logistic annex to operations plans of the unified and specified commands will contain the necessary guidance for preparation of base development plans, including, as appropriate, responsibility for construction management. These instructions should require specific provisions for the coordination and control of construction in the combat area, as suitable to the contingency operation planned. In addition, the planning instructions should also provide that the number of base development plans prepared in detail be proportional to the number of contingency plans that can be developed and given an adequate logistic appraisal. Since contingency operations generally do not develop exactly as anticipated, base development plans should be prepared only in sufficient detail to provide a sound basis for establishing resource, programming, and funding requirements.

2. As the situation moves from a planning into an implementation stage, wide reprogramming authority should be vested in the commander of a unified command to permit reaction to inevitable changes, with control at higher level in the form of general policy guidance and after-the-fact veto. Military construction programming and funding procedures are not appropriate for wartime construction in the theater of operations. A completely new programming and funding procedure, developed specifically to satisfy construction requirements in contingency operations is needed. The major considerations of such a system should be responsiveness, flexibility, visibility, and discipline, with requirements submitted on a gross basis.

3. A significant contribution to flexibility is found in preengineered, prefabricated, relocatable facilities, which offer great potential for improving construction responsiveness and reducing the theater construction workload.

4. The Joint Chiefs of Staff, recognizing the importance of construction standards and preengineered facility components, established the Joint Staff/Services Construction Board to facilitate the exchange of information on Service functional and retrievable component concept research and development programs, and to develop construction standards and planning factors for adaption to various contingency situations. The Construction Board is organized on an ad hoc basis. The

⁴Joint Chiefs of Staff, Memorandum SM-643-69, 1 October 1969.

importance and urgency of the task of the Construction Board justify the provision of a full-time staff to provide analytical and administrative support. In addition, the majority of the JLRB believes that the responsibilities of the Construction Board should be expanded to provide that, in behalf of the Joint Chiefs of Staff, the Board should monitor certain actions related to contingency construction requirements.

5. The Board has made the following recommendations:

(CO-8) The Joint Chiefs of Staff instructions regarding base development planning for joint operations (SM-643-69) require specific provision for the coordination and control of construction in the combat area, as suitable to the contingent operation planned. The planning should set forth the composition and role of a construction directorate on the staff of the joint field commander if warranted by the scope and complexity of the contingency.

(CO-4) Rather than concentrating on specific details, such as individual line item identification and siting, contingency base development planning place emphasis on the following:

- (a) Determination of gross requirements derived from typical site layouts.
- (b) Troop and contractor effort requirements.
- (c) Funding required under variable parameters of force levels, locations, types of operations, and climatic conditions.
- (d) Key construction items with long lead times with particular attention to dredges, pile drivers, prefabricated piers, and rock crushers.

(CO-6) Subject to overall controls, the flexibility provided to the commander of a unified command in the execution of the construction program in a combat area be broad and commensurate with the responsibilities assigned and the exigency of the situation. To achieve this, the Office of the Secretary of Defense should develop and sponsor a completely new appropriation with established formats, programming procedures, and limitations specifically tailored to achieve an optimum balance of flexibility, responsiveness, visibility, and good management. This appropriation would be temporary in nature and applicable only during the contingency situation. It is suggested that such an appropriation be called "Contingency Construction Appropriation" and that the development of such an appropriation, and the management thereof, be based on the following:

(a) Definition of programs on the basis of gross requirements identified by a limited number of standard Department of Defense facility category groups.

(b) Appropriation of funds commensurate with the level of effort to be mobilized and maintained, in keeping with gross requirements, the completion schedules, and the troop-contractor mix.

(c) Mobilization and demobilization costs funded separately from other construction costs.

(d) Introduction of line item identification at the construction directive stage of program execution.

(e) Authorization to make exceptions to "full funding."

(f) Allocation of construction funds in a single account for each Service without fiscal year identification of follow-on funds. Such follow-on funds should be additive to the accounts applicable to facility category groups in the total program.

(g) Control of construction above the unified command level not based on detailed line item approval but exercised through broad guidance and veto power, with base "Complex Reviews" and established reporting systems providing the necessary data for decisionmaking.

(SM-32) The Services develop methods of establishing initial essential supply storage facilities capable of being erected and outfitted in minimum time without reliance on standard construction programs. The Army's Containerized Depot—Project YZJ, The Navy's Advanced Base Functional Components, the Marine Corps' Expeditionary Airfield, and the Air Force's Project Coronet Bare concept suggest methods that should be exploited and developed. A possible means of providing initial minimum essential supply storage facilities include prepackaged mobile depots, vans, binned containers, semipermanent quick-erect structures, landing matting, portable reefer units, floating storage, and rapid soil stabilization techniques. The Services should include such capabilities in planning for contingencies.

(CO-1) The Joint Chiefs of Staff ensure that the following are accomplished:

(a) Ensuring a continuing full exchange of information among the Services in major aspects of base development planning.

(b) Identifying any interface problems among the Services and unified chains of command in base development planning and related information.

(c) Monitoring progress in regard to standardization and planning factors.

(d) Monitoring overall readiness to meet contingency construction needs, the status of major deficiencies identified in the contingency planning process, and the availability of any specific assets of such critical importance that the lack of them would limit significantly contingency plan implementation.

(CO-2) In order to assist the Joint Chiefs of Staff in the accomplishment of the preceding responsibilities, the Terms of Reference of the Construction Board for Contingency Operations⁵ be amended as indicated in Appendix F of the Construction Monograph.⁶

(CO-3) Because of their importance, high priority be assigned to the completion of tasks assigned to the Construction Board for Contingency Operations and officers be assigned to work for the Board on a full-time basis as necessary to complete these tasks.

⁵Major changes in the Terms of Reference provide the Board a staff on a full-time basis and assign the following responsibilities:

(a) Ensure a full exchange of information among the Services regarding the construction aspects of base development planning to include planning systems and the results of Service functional component and retrievable concept research and development programs

(b) Assist in identification of any interface problems among the Services and unified chains of command in base development planning and related information

(c) Examine in detail the use of preengineered units that can be retrieved and relocated

(d) Develop construction standards and planning factors for use, as applicable, in various contingency situations

(e) Monitor progress in regard to standardization and planning factors

(f) Monitor the status of actions taken to overcome major construction deficiencies identified in base development plans to include the availability of specific construction material and equipment assets of such critical importance that the lack of them would limit significantly contingency plan implementation.

⁶The Navy member concurs with the assignment of high priority to the completion of tasks assigned to the Construction Board, the assignment of officers on a full-time basis to the extent necessary to complete these tasks, and tasking the Board with monitoring progress in the application of standards and planning factors developed, and with ensuring continuing exchange of information on the technical aspects of base development planning for contingencies; the Navy member does not concur with other recommended changes to the Terms of Reference that would further extend the purpose and responsibilities of the Board.

SECTION I

ADPS SUPPORT IN THE COMBAT AREA

BOARD FINDING NO. 9

Effective and efficient logistic support to deployed forces has become absolutely dependent on Automatic Data Processing Systems (ADPS) in supply and maintenance operations. ADPS capability for logistic management must be introduced in a combat theater as soon as possible with adequate communications support and with the capability of interfacing with ADPS outside the combat area.

1. Each of the Services found it necessary to rely increasingly on automatic data processing systems (ADPS) to perform logistics operations in the Vietnam era. There were two principal reasons. First, the sheer magnitude of the problem of recording the receipt and location of property; providing for the computation of stock levels, requisitioning shortages, and reporting excesses; and managing the maintenance function were all beyond the capability of manual processing. Second, logistics operations in the continental United States (CONUS) are mechanized and work efficiently only with properly interfaced and mechanized processes at the operational level.
2. In planning for the introduction of ADPS in a combat area, consideration must be given to the availability of proven ADPS programs and equipment. Standardized supply and maintenance procedures to which ADPS can be applied permit interface with CONUS systems and provide immediate and responsive means for logistic management. It must be emphasized that effective automatic data processing support to logistic operations requires adequate resources in terms of personnel, proven programs, and facilities, as well as equipment.
3. Communications capable of transmitting high-speed digital data are necessary to provide the maximum advantage of ADPS. Where such communications are not available, it will be necessary to hand-carry punch cards or ADPS tapes for transmission by the automatic digital network (AUTODIN). Where adequate communications channels exist, many activities can use deployable, remote devices, linked to data processors outside the combat area, possibly in CONUS. Such devices may be able to perform the same or essential missions in the combat area as a full automatic data processing system but with a greatly reduced need for operating and maintenance personnel.
4. When introducing automatic data processing systems into a combat area, consideration should be given to the use of transportable equipment before programming fixed facilities. The Services have developed and used transportable units of various types, but further improvements are necessary to ensure compatibility with the operational environment and the nature of the required support.

5. The Board has made the following recommendation:

(DP-1) For contingency operations each Service have available Automatic Data Processing Systems packages compatible with the continental United States system with which they must interface. These Automatic Data Processing Systems packages should include mobile Automatic Data Processing equipment, proven programs, data transmission equipment, and trained personnel, and must be so designed that they can be readily expanded to meet unforeseen requirements without major problems in translation to greater capacity. Contingency plans should provide for early deployment of an Automatic Data Processing Systems package adequate to meet forecasted in-country logistics management requirements, with a reasonable safety factor to meet unforeseen demands.

SECTION J

COMMUNICATIONS

BOARD FINDING NO. 10

Logistic management has become increasingly dependent on automatic data processing and high-speed digital data transmissions, both within the contingency area and between CONUS and overseas locations. Therefore, logistic contingency planning must be explicit as to communications requirements and heavy transportable self-contained equipment must be developed to provide prompt availability of high-quality circuits, automatic switches, and terminal equipment to tie into the automatic digital network (AUTODIN).

1. The J.S. experience in Vietnam has emphasized the need for early recognition of specific requirements for communications in support of logistics to ensure adequate programming to fulfill these requirements concurrently with the requirements of many other users. Ideally, logistic requirements for communications should be specific at the doctrinal level; at the least, these requirements should be identified when contingency plans are prepared.
2. In accordance with service doctrine, current plans for communications support for logistic units generally provide for such support through means of common-user circuits furnished by both the Defense Communications System (DCS) and military tactical communications systems. Communications capabilities are adequate in those areas of the world covered by fixed-plant portions of DCS, which provide access to AUTODIN. To extend DCS into other areas of the world, the same types of equipments as those used in Vietnam, i.e., high-frequency, single-side-band radio and satellite communications, would be required. Both of these systems have limited capabilities, and are generally unsatisfactory for high-speed digital data transmissions.
3. Tactical systems in the theater of operations also have problems in capability of transmission. Tactical equipment is designed for rapid emplacement and does not provide the quality and capacity needed for high-speed data transmissions over an extended period of time. Furthermore, tactical data terminals and data switching equipment are not available in the required numbers, and tactical voice switching systems are not automated. Problems have been encountered with regard to interfaces both in the field and with DCS, involving in one case separate development of equipments with similar functions and capabilities.
4. In summary, then, there is a need for a communications system in support of logistics that requires capabilities beyond those of current military tactical systems and that is more responsive than a system dependent upon construction of fixed-plant facilities. In taking corrective action, full recognition must be given to the requirements for digital data transmission that extend well beyond existing fixed-plant facilities. Identification of the entire needs of logistics by the military services is an important step in the development of communications concepts and plans.
5. The Board has made the following recommendations:
 - (CM-1) The Joint Chiefs of Staff instructions for contingency planning give specific reference to the identification of logistic requirements for communications and the means of gaining access to the Automatic Digital Network system.
 - (CM-2) The Services include the identification, quantification, and justification of specific logistic requirements for communications as part of their basic doctrinal reviews and studies, e.g., the Army-80 series of studies.

(CM-5) The Secretary of Defense direct necessary actions to achieve a capability for the rapid extension of Automatic Digital Network (AUTODIN) to remote theaters-of-operations. These actions should include:

(a) Tasking the Director, Defense Communications Agency, to perform systems engineering effort toward providing solutions to the satellite communications transit time effect with a target of establishing high-speed (up to 200 cards per minute) data links via satellites.

(b) The AN/TSC-54 mobile satellite terminals be modified to provide at least a 12-channel capacity.

(c) Pending the modification of the AN/TSC-54's, the Joint Chiefs of Staff designate two of the existing AN/MS-46 transportable satellite terminals for support of contingency operations.

(d) The three existing Defense Communications System contingency packages be augmented to include the communications equipment necessary to provide a high-speed data (200 cards per minute) terminal for AUTODIN access, making maximum use of available commercial equipment to provide an immediate capability.

(CM-6) The military departments take that action necessary to achieve a high-capacity tactical data transmission capability that is fully compatible with AUTODIN. This should include initiation of the systems engineering effort required to provide message switching and transmission over low-quality tactical communications systems. As a part of this effort, the Navy should continue its engineering development of a reliable high-frequency fleet logistic digital data transmission system capable of interfacing with high-speed automated systems ashore.

(CM-10) Heavy transportable modular communications equipment for Defense Communications System restoration or extension be acquired at the earliest practicable date.

(CM-11) The military departments orient their preengineered fixed-plant facilities programs to include heavy transportable communications equipment incorporating the modular concepts recommended for Defense Communications System restoration and extension.

(CM-12) In the development of concepts and planning for automatic data processing equipment to support logistics, the Services give full and specific consideration to the requirements placed on communications, available capabilities, vulnerability, and costs and to tradeoffs between the requirements for data and for communications.

SECTION K
COMMON SUPPLY

BOARD FINDING NO. 11

Common supply of high-demand items used by elements of two or more Services can result in effective and economical supply support. The most profitable areas for the application of common supply support include subsistence, selected items of POL, and construction material. There is a need to develop criteria defining the commodities and conditions under which common supply support should be applied.

1. The Board's finding with respect to common supply reflects a perspective that should be clearly understood. There are two principles that underlie the Board's position on supply support in general:

a. Echelons between the CONUS wholesale source and the consumer should be held to the minimum required

b. Range and depth of intermediate stockage in overseas areas should be as low as possible.

2. The number of supply stockage points between CONUS and the overseas consumer is not just a product of supply philosophy; it is largely dictated by the missions of the individual Services and the different environments in which they operate. The Air Force, operating from major fixed (albeit at times austere) installations around the world, enjoys an optimum situation and therefore is able to provide supply support directly from CONUS to each base stockage account.

3. On the other hand, the Navy fleets are completely mobile and must be capable of fleet concentrations and dispersions as necessary in any of the waters around the world. Obviously, effective supply support requires some strategic selected intermediate stockage in addition to distribution directly to the operating units from the supply center on each coast.

4. The Army and the Marines are subject to far more complex problems. In any major emergency with their units widely scattered, their requirements are far more fluid and surge tanks of intermediate stocks are generally essential. Even so, the Army is testing a concept (Direct Supply Support Test, DSST) for direct support from CONUS to the division level in Europe. Capitalizing on the advantages of containerization and increased airlift capacity is an essential element of the Army concept.

5. As set forth in its report, the Board strongly believes that there is a great opportunity to reduce problems in the combat area by reducing the range and depth of stocks in forward depots and bases. Except for a minimum number of items critical to combat operations, stockage in forward areas should be limited to high-demand items. Low-demand items should be routinely supplied by air. Reducing combat area stockage will materially reduce the theater workload and permit concentration of limited logistic resources on improving supply responsiveness for those hard-core items that are most in demand.

6. These principles of minimum echelons of supply and reduced stockage in the combat area impact on the application of common supply in overseas areas basically because the net effect will be to decrease the number of items eligible for selection for common supply in the combat area. It is to be noted that the Board considers that the merits of integrated management have been judiciously applied at the CONUS wholesale level and its effectiveness has been clearly

established. Single manager items, whether stocked overseas or not, will continue to be supplied from the common supply wholesale systems in CONUS. However, items that are used by only one Service or low-demand items that are shipped directly from CONUS to combat units without intermediate storage between those units and the CONUS wholesale system should not be forced under common supply in the overseas theater. To do so would abrogate the principles of limited supply echelons and reduced stocks merely to further extend common supply into the overseas areas.

7. On the other hand, when conditions are favorable there is a clear case for common supply of high-demand items used by two or more Services, such as food, selected items of construction materials and of packaged and bulk POL, and housekeeping supplies. The case is not so clear for low-demand items used by two or more Services, for most of those under the Board's concepts will not be stocked and should move as rapidly as possible from the CONUS base to the consumer in the field. There appears to be even less justification for applying common supply in an overseas area to items used only by one Service.

8. The following profile of integrated items stocked in Guam and Japan illustrates the point at issue.

<u>Location (Service)</u>	<u>Total</u>	<u>Unique to One Service</u>	<u>Common to Two or More</u>	
			<u>Number</u>	<u>Percent</u>
Guam (AF & Navy)	79,590	72,654	6,936	8.7
Japan (AF, Army, Navy)	239,403	213,354	26,049	11.1

Of the total integrated items stocked in Guam and Japan, only 8.7 percent and 11.1 percent of these lines are common to two or more Services. It seemed to the Board that the major advantages in common supply overseas would accrue from applying the principle of common supply to those items that are actually in common use in the theater and that putting the remaining integrated management items under the same system would result in system disruptions and probably in increased costs. Certainly, the case for such an extension should be based on hard facts and not on generalities such as reducing the number of pipelines.

9. There are, of course, opportunities to increase the commonality of items by purifying the master data files to eliminate different Federal stock numbers for what are substantially the same item and by broadening the base of acceptable substitutes. However, these exercises should be undertaken in CONUS and not forced onto field activities where meager resources and lack of sophisticated data bases pose substantive challenges to effective supply management even for hard-core items.

10. In summary, the Board believes that reduction of the logistic workload in the combat area is one of the more important lessons learned in the Vietnam era. Common supply in the overseas area is one of the concepts that will further this reduced workload objective, but it must be applied judiciously with items selected for common supply being based on a full appreciation of the impact on the formalized procedures of the Services for supplying combat units with essential items.

11. To minimize these impacts, the Board has endeavored to establish a set of criteria to provide a basis for decisionmaking to ensure the application of common supply in the most effective and economical way. These criteria, discussed in the monograph on Common Supply, are related to three categories of integrated management items stratified as follows:

a. Category I—Items that have high, stable, predictable demands, amount to large bulk and tonnage, and are used by two or more Services in the overseas area being considered (e.g., subsistence, packaged POL, bulk petroleum such as motor gasoline, and selected construction materials).

b. Category II—Items that are used by two or more Services but do not meet the stable and high-demand criteria of Category I.

c. Category III—Items that are used by only one Service in the area.

12. The Category I items are clearly suited for common supply system support. As indicated in the examples above, some items of materiel meet all the criteria for this category and should be considered for inclusion in any common supply system. Subsistence particularly is well suited to common supply support arrangements. Other commodities not shown as examples above, such as clothing, medical, automotive, and general supplies, also will include items that meet the Category I criteria and should be included in common supply support arrangements.

13. Category II may include items suitable for inclusion in common supply support arrangements, depending upon the significance of the costs involved and the degree of disruption of normal supply channels. Determinations must be made on an individual-item basis for materiel falling into this category. The JLRB recommendations aimed toward restricting stockage outside CONUS to relative high-demand items except for specially selected critical items, generally for low-density systems, will tend to eliminate many Category II integrated managed items from consideration for overseas stocking.

14. The JLRB can find no sound reason for supporting most Category III items through common supply systems overseas, since by definition these items are used only by one Service. To put these items under common supply would appear to force an abnormal support system under the facade of common supply when, in fact, there is no common usage. Costs involved would tend to increase mainly because of the handling required by an intermediary previously not in the requisitioning channel and the necessary expansion of the support data base of the intermediary by as many as a million Federal stock numbers for which the intermediary is not a recorded user.

15. Positive identification of common supply items (and all valid substitutes) should be accomplished by joint action of the Services using the guidelines and criteria developed above. Once identified, these items should be compiled in a common supply catalog to be used overseas wherever and whenever common supply systems are established. Such a catalog would clearly define the boundaries of common supply and provide a sound basis for its implementation.

16. The Board has made the following recommendation:

(CS-1) Common supply overseas be applied to a definitive list of items, substitutes included, jointly developed by the Services; that common supply be implemented with a jointly prepared set of common supply and funding procedures; that it be used as a normal procedure whenever implemented; that implementation in both peacetime and emergencies be at the direction of commanders of unified commands following the principles of JCS Publication 2, Section 6, in assigning responsibility for common supply to Services; that commanders of unified commands tailor implementations as to items to be supported, designate the Service or Services to provide such support, and schedule the phasing-in of common supply in times of emergency; and that the specific determinations made regarding common supply support during emergencies be included in appropriate contingency plans.

SECTION I

POL

BOARD FINDING NO. 12

Because POL is so essential to support of military operations, the responsibilities of and interfaces between the military departments, the unified commands, and Defense Supply Agency/Defense Fuel Supply Center must be clearly defined so as to eliminate misunderstanding.

1. In view of the essentially complete dependence of the operating forces on a continuing supply of fuel, adequate in quality and quantity, it receives close daily attention at all levels of command within the Services and specialized treatment in their logistic systems. Close coordination over its distribution to storage points within each theater is exercised by the commanders of unified commands. As a result, the needs of the operating forces were fully met in the Vietnam conflict, under conditions at times of extraordinary difficulty. The military POL systems established in Vietnam by CINCPAC and the logistic systems of the Services were highly effective.
2. Vietnam differed radically from prior wars in the degree of reliance on contractors and sub-contractors for storage and distribution of products in-country, often with a commingling of Government- and contractor-owned stocks. These contractors were responsive in meeting military requirements under the dynamic conditions of warfare. Whereas contract administration services provided by the military departments in overseas areas to the Defense Supply Agency (DSA), worked smoothly under the more stable conditions outside SE Asia, major difficulties in contract administration and POL accounting arose in the combat environment of the Republic of Vietnam. Further complications resulted from ambiguities and misunderstandings as to responsibilities in relation to the contractors. The pertinent instructions and directives were in considerable detail and tended to be confusing. Basic responsibilities and relationships were at times subject to varying interpretations. There is a need for clarification and the fixing of responsibilities and accountability for overseas contracts firmly and unambiguously. The assignment to DSA of worldwide responsibility for and surveillance over administration of DSA contracts for supply of bulk petroleum and related services must be made clear and definite.
3. In view of the overall effectiveness of POL support in meeting military needs and its specialized management, problems readily suited to joint solution were often not surfaced promptly at the policy levels of the Services and DSA. A means for high-level Service participation in policy and planning under the Joint Chiefs of Staff was found necessary in World War II but was subsequently dissipated. There is a need to reestablish under the Joint Chiefs of Staff a Joint Petroleum Committee at the level of the logistic deputies of the Services and the Commander of DSA in order to ensure prompt solution of mutual problems and enhanced readiness for war.
4. Provision should be made for development of compatible procedures, regulations, forms, and other documents for the supply, storage, distribution, transfer, and accounting for petroleum products among the Services and DSA.
5. A POL Field Assistance Team, established by DSA in coordination with the military departments, could provide valuable assistance in the early identification of problems in management and procedures and advising corrective actions.
6. A review and evaluation of the DOD petroleum Management Study Report of 8 October 1968 as requested by the Secretary of Defense is contained in the POL Monograph (Chapter VII).

Preceding page blank

7. The Board has made the following recommendations:

(PL-9) Directives be clarified to fix unambiguously on Defense Supply Agency/Defense Fuel Supply Center responsibility for and surveillance over the administration of Defense Supply Agency contracts for supply of bulk petroleum and for services related thereto.

(PL-10) Defense Supply Agency/Defense Fuel Supply Center, in coordination with the military departments, develop and maintain compatible procedures, regulations, forms, and other documents for the supply, storage, distribution, and accounting of POL products.

(PL-11) Defense Supply Agency/Defense Fuel Supply Center, in coordination with the military departments, develop a POL Field Assistance Program to provide assistance and advice to installations and activities of the military services, other Department of Defense components, and contractor activities. The objectives of the Field Assistance Program are to evaluate management functions performed in the field; determine the adequacy of Defense Fuel Supply Center sponsored procedures and regulations; identify problem areas and recommend preventive measures; identify actions necessary to improve effectiveness and economy; and provide military services and other Department of Defense components information and advice concerning problems requiring their attention for corrective actions. A proposed revision of Directive 4140.25 is in Appendix H, POL Monograph, and when approved will implement recommendations (PL-9), (PL-10), and (PL-11).

(PL-12) The Joint Chiefs of Staff establish a Joint Petroleum Committee to:

(a) Advise and assist the Joint Chiefs of Staff in establishing priorities and allocations of petroleum products when required during periods of international tension and war.

(b) Resolve problems when the Services and the Defense Supply Agency cannot agree.

(c) Ensure the development and proper functioning of a Field Assistance Program.

(d) Monitor the responsibility assigned to the Defense Supply Agency in coordination with the military departments to standardize procedures, regulations, forms, and other documents for the supply, storage, distribution, transfer, and accounting for POL products.

(e) Review plans for the supply of POL in time of war.

(f) Recommend petroleum policies. A proposed charter for the Joint Petroleum Committee is in Appendix I, POL Monograph.

(PL-13) As a matter of priority, the Defense Fuel Supply Center, in coordination with the military departments, establish a field assistance team to visit Vietnam, evaluate POL contract administration, and make specific recommendations to the Services and the Defense Supply Agency for improvement.

(PL-14) The Defense Supply Agency/Defense Fuel Supply Center, in coordination with the military departments and with the guidance of the Joint Petroleum Committee, if established, give high priority to the rewriting of existing instructions and directives. The purpose should be simplification and elimination of ambiguities regarding functions, responsibilities, duties, and relationships.

SECTION M

EXCESSES

BOARD FINDING NO. 13

Major origins of excesses in SE Asia were the inability to accurately forecast requirements during the rapid buildup, often undisciplined and repetitive requisitions, and overtaxed and inadequate logistic management resources. Some unavoidable excesses were created by changes in operating decisions and by obsolescence of equipment. Steps must be taken to tailor logistic operations to those that can be reasonably performed in the combat area. Programs should be established to identify excesses as early as possible during the initial phase of a conflict and should continue throughout its duration. An effective system for the rapid redistribution of identified excesses should be available as soon as practicable.

1. In reviewing the materiel excesses of the Vietnam era and their causes, it is apparent that several steps can be taken by the military services to minimize avoidable excesses. The following paragraphs outline the more important aspects of a correction program that could be undertaken by each Service.
2. Push packages for initial supply support will be required for future combat operations. However, Vietnam experience proved that push packages must be developed on an austere basis rather than attempting to meet all requirements. Push packages should contain only those items of supply that are critical or fast moving, and the pull system should be made responsive to other requirements. All push packages should make maximum use of standard containers with stocks prebinned and accompanied by locator cards. The containers can be used as temporary storage facilities.
3. Vietnam experience demonstrated that, if the theater's capacity to receive, store, and document is exceeded, incoming supplies tend to become lost in the system and not identified as usable assets. The theater logistics resources, hard pressed to fulfill normal requirements in a difficult environment, were further handicapped by the backlogs that developed. Restraints to preclude over-requisitioning are difficult to organize and define during a combat situation. Much can be done during peacetime, however, to establish a basis for requisitioning to meet the needs of combat with full appreciation of the fact that adjustments will be required to meet specific conditions. The range of stocks available for housekeeping items to be used in overseas areas can be limited by restricted catalogs or by authorized requisitioning lists. Logistics procedures can be established to rely on air transportation for most infrequently demanded items as well as for high-priority and high-cost materiel, thus greatly reducing the number of items for which stockage should be maintained. For high-cost materiel the reduced order and ship times will lessen the inventory investment. Modern communications and automatic data processing systems provide the means for visibility of assets at appropriate management levels and make it possible for managers to respond to problems of overages as well as shortages. Policies calling for maximum maintenance in forward areas are being revised by the Services and should assist in reducing the range of items stocked in theater. The use of prefabricated, recoverable buildings will reduce construction requirements and provide early logistic capabilities. It will decrease some of the demand for construction materials, one of the sources for excesses in Vietnam. All of the above should permit more concentrated management of the hard-core essential items that must be stocked and distributed in the combat area.
4. Considering all the reductions that can be effected for logistics requirements, an adequate logistics base must nevertheless be established prior to or concurrent with the buildup of combat forces. A balanced force structure of combat and logistic forces is required if excesses are to be prevented. It is obvious that in some instances the tactical situation will dictate an

unbalanced force; however, it must be realized that when this occurs, effective logistic support may be achieved but the efficiency of logistic support will suffer.

5. In spite of preparations that can be made for contingency operations, logistics will almost certainly present problems during the initial stages of conflict. Control mechanisms need to be available to the theater commander, to permit him to match shipments against his capability to receive and process, to allocate limited resources, to establish priorities, and to perform other related functions.
6. Monitoring the flow of Army materiel to overseas areas was a responsibility of the Army's Overseas Supply Agencies prior to July 1964. The disestablishment of these agencies at that time, at the direction of OSD, created a void in the Army's logistic system that decreased significantly Army intelligence on the buildup of logistic support in Vietnam. In an attempt to fill this void, the Army established the Logistics Control Office Pacific (LCOP) in early 1965 to expedite shipment of critical items and to provide an interface between the theater of operations and CONUS supply sources.
7. Unfortunately, the LCOP did not achieve full operational efficiency until late 1967 after most of the buildup was completed. There is no doubt that this lack of centralized control during the buildup period contributed significantly to Army excesses in Vietnam. The Army has a continuing requirement for Logistic Control Offices in peacetime with the capability to be rapidly expanded to support contingency operations.
8. The Navy and Marine Corps had organizations suitable for monitoring and controlling shipments to the Western Pacific. These assisted in the minimizing of excesses.
9. The Air Force procedures are oriented to control the stock levels and equipment at each of its overseas bases in accordance with standardized methods. Shipments are made directly from CONUS wholesale activities to the bases. Excesses developed through inability to process shipments received during the buildup, which resulted in requisitioning; from program changes; from excesses in push packages; and from similar causes. The Air Force's current worldwide visibility of its assets permits satisfactory redistribution of local excesses.
10. It is significant to note that, for the first time, the Services did take decisive actions to identify and redistribute excess material prior to the cessation of hostilities. These actions resulted in considerable savings of tax dollars. In spite of these positive steps the materiel utilization systems in existence during the Vietnam War did not provide maximum redistribution of potential excesses. A centrally coordinated screening system using standardized procedures is required to eliminate many of the current problems and improve utilization of worldwide excess materiel on a timely basis.
11. Many of the above lessons learned support recommendations found in other sections of Volume I and in the monographs of the JLRB report that will contribute to the reduction and improved management of excess materiel. Those recommendations that will have the most significant impact on reductions of excesses relate to:
 - a. Regulating the input of cargo to that within reasonable reception capability.
 - b. Reducing range and depth of theater stocks.
 - c. Early introduction of mobile ADPE adequate for the management workload.
 - d. Provision of prefabricated storage facilities.
 - e. The exploitation of containerization.
 - f. Minimizing requirements for maintenance in the theater.
 - g. The Army maintaining a Logistic Control Office.

12. In addition to all the recommendations developed in other sections of Volume I and in the monographs that will serve to reduce the excess problem, the Board has made the following recommendations related to excesses:

(EX-1) The identification of excesses be initiated as early as possible in any future conflicts, and an organization and system for the efficient, effective redistribution of excesses in overseas theaters be maintained on a permanent basis.

(EX-3) The Assistant Secretary of Defense (Installations and Logistics) approve the concept of a single worldwide excess screening activity under the control of the Defense Supply Agency. The Defense Supply Agency should be charged to develop, in close coordination with the Services, standard systems and procedures required to implement this concept.

SECTION N

CONTAINERIZATION

BOARD FINDING NO. 14

Containerization offers the Services a major opportunity for a breakthrough in simplifying and speeding logistic support to deployed forces. Therefore, the use of containers should be developed and exploited as rapidly as possible.

1. While containers were being successfully used in support of forces deployed in Vietnam, the movement to containerization within the commercial transportation industry accelerated rapidly. The development and growth of the U.S. merchant marine container ship fleet has been accompanied by a reduction in the U.S. flag break-bulk cargo fleet. A significant consequence of this total commitment toward containerization is that the bulk of the maritime shipping augmentation furnished by the U.S. merchant marine to the Department of Defense in the future will consist of containerized shipping. There is also clear evidence that before many years, up to 80 percent of commercial air freight will move in containers. The Services, relying in substantial measure on commercial sources for sealift and airlift, as always, must therefore be prepared to routinely utilize containers as the principal means of logistic support of combat operations.
2. The relevant facts are clear:
 - a. The commercial maritime industry is totally committed to containerization.
 - b. Military applications of containerization during the Vietnam era have been singularly successful.
 - c. Future overseas logistic operations will be heavily dependent upon containerized shipping support.
 - d. The MSTS nucleus fleet must be modernized with containerized capabilities and systems to complement commercial augmentation and be responsive to the container-oriented logistic systems requirements of the service user.
3. Containers, however, cannot be considered as just another means of transportation. The full benefits of containerization can only be derived from logistic systems designed with full use of containers in mind. Maximum use of containers in a supply and distribution system that has been tailored to favor their use will result in savings in shipping costs, port handling costs, the amount of material in the supply pipeline, overseas port and depot construction costs, losses due to pilferage and damage in shipment, and reduction in requirements for numbers and skills of logistic personnel.
4. A system designed to exploit the use of containers to secure these benefits for the Department of Defense must include consideration of all elements in the system. The elements include supply and maintenance procedures, containers, container ships, documentation, port facilities, container-handling equipment, and the many alternative uses of containers in overseas areas.
5. In any systems design effort, consideration should be given to the use of containers to carry accompanying supplies and containerizable unit equipment that must be moved upon the deployment of units. These containers should be expected to remain with the units to provide covered, mobile storage for their basic loads of accompanying supplies. Containers may also be used to temporarily provide the majority of the covered storage required in supply points and depots in the combat zone. Supplies can be issued direct from the container, and the container can be

replaced when it is empty. Containers can also be used effectively to provide covered, binned storage facilities, maintenance, communications, and automatic data processing shelters. Other advanced base components should be designed within the dimensions and materials handling criteria applicable to the standards of intermodal containers.

6. If containers are to be used to the maximum extent to support deployed forces, the Services must develop the capability to move them across beaches in undeveloped areas following discharge from ships in the stream. There are several alternative methods that may be developed to achieve this capability. These methods include the use of heavy-lift helicopters to move containers directly to depots or marshalling areas, of barge-mounted cranes to unload containers to lighters, and of large shore-based mobile cranes to discharge containers from lighterage. All of these factors must be considered in the design of containerized logistic support systems. Systems design efforts must be guided by one basic principle: "The compelling force behind the development of containerization must be the logistic users of containers rather than transportation operators." The Military Sea Transportation Service, the Military Traffic Management and Terminal Service, and the Military Airlift Command must, within practical limits, adjust their procedures for transportation services to accommodate the systems concepts of the users.

7. Container-oriented logistic support systems can be broken down into two basic subsystems, and commercial enterprise is directed toward developing these subsystems. These subsystems rely on land-water-land movement of containers, and on land-air-land movement of containers. Since the Army sponsors two-thirds of the cargo moving overseas by surface means, operates ocean terminals both in the United States and overseas, and must clear cargo from these ports, it has the predominant interest in the land-water-land subsystem. It would be logical, therefore, to ask the Army to lead a jointly staffed effort to the land-water-land subsystem of container-oriented logistics systems.

8. The Air Force has the predominant interest in the land-air-land subsystem. It relies on air transportation to a significant degree in the resupply of its units, and it operates the air terminals. It should, therefore, lead a jointly staffed effort in developing the land-air-land subsystem.

9. Full coordination between the Services, the Defense Supply Agency, and the single manager operating agencies is necessary to ensure that user concepts are operationally supportable and economical. Such an approach would not prohibit individual Service actions on systems applications peculiar to that Service, for example the Navy's underway replenishment activities. In addition there must be a formal means of coordination between the joint efforts led by the Army and the Air Force to ensure the development of Common Standards and compatible subsystems.

10. The objectives of these joint efforts should be to:

- a. Develop basic doctrinal concepts, systems design, and operating procedures for exploiting the use of van-sized containers and modules in that portion of logistic operations dependent upon a land-water-land or land-air-land transportation system.
- b. Outline and monitor such feasibility tests and development as may be necessary.
- c. Standardize mechanical interfaces between containers, modules, transportation equipment, and materials handling equipment.
- d. Provide a basis for development of service-related requirements.
- e. Define the impacts on and special requirements related to depots and single manager transportation agencies.
- f. In summary, DOD policy should state that everything that will fit in a container should move in a container, with deviations to this policy treated as clear-cut exceptions.

11. Full military application of intermodal containers will substantially improve and simplify logistic operations. Military logistics systems, procedures, and equipment must be developed

as a matter of urgency to capitalize upon the inherent advantages and maximize the efficiencies of containerization.

12. The Board has made the following recommendations:

(CN-9) The Logistic Systems Policy Committee task the Departments of the Army and the Air Force to lead jointly staffed efforts to coordinate the development of land-water-land and land-air-land container-oriented logistic systems, respectively. The thrust of these efforts should stress the "how" and not the "whys" of containerization, and be directed toward early development of container-oriented logistic systems. In order to ensure the incorporation of all relevant considerations and maximize the probability of prompt implementation of recommendations, the senior Service representatives engaged in the joint efforts should be responsible to their respective Services as well as to the Director of the joint effort.

(CN-6) The Services jointly develop and test the capabilities and procedures for the conduct of logistics-over-the-shore (LOTS) container operations. Based on the results of these tests, the Services should establish their requirements for a family of containers, container ships, and container-handling equipment to support LOTS operations and should procure sufficient quantities of this equipment for ensured support of a contingency operation in underdeveloped areas.

(CN-4) The Joint Chiefs of Staff determine the number and types of container-capable ships that must be in the Military Sea Transportation Service nucleus fleet in order to implement a containerization policy that will provide the resources necessary to meet requirements for peacetime support, and for contingency operations until such time as commercial container ship service can be made available and operational in the contingency area. Other recommendations that relate to this subject appear in the Transportation Monograph.

(CN-5) The Secretary of Defense seek to have the legislation stemming from the President's Merchant Marine Program include positive provision for ensuring the responsiveness of modern U.S. flag container ships with gantry crane rails installed to meet military requirements under various conditions of emergency. Other recommendations that relate to this subject appear in the Transportation Monograph.

SECTION O

CONCEPTS FOR FUTURE LOGISTIC SUPPORT IN THE COMBAT AREA

BOARD FINDING NO. 15

Available techniques must be aggressively pursued to reduce the requirement for logistic resources in the combat area without a reduction of operational capability.

1. **General.** Some of the techniques that can be used to reduce the demand in the combat area for logistic personnel and facilities have already been discussed. For example, techniques that can result in reduction of logistical operations in-theater are related to:

- a. Preengineered designs for and selected war reserves of prefabricated structures and functional components
- b. Containerization
- c. Increased airlift capability
- d. Common supply.

2. **Prefabricated Structures and Functional Components.** Stocking prefabricated structures and functional components in war reserves will provide an immediate source of critical facilities, such as berths for ship discharge, covered storage, maintenance facilities, administrative buildings, and housing, with a minimum of in-country effort in materiel and personnel. Another means of obtaining early logistic capabilities and reducing the need for construction is by the use of ships and craft for logistic functions. In the Vietnam War many such waterborne units, left over from prior wars and often reconfigured for a specific task, provided capabilities for such logistic functions as repair, storage, power supply, berthing and messing, and for communications. Their mobility was of particular value as the situation changed.

3. **Containerization.** Containerization affords a major opportunity for:

- a. Reduction in resources for port and depot operations
- b. Use as temporary storage
- c. Simplifying the translation of cargoes received from the continental United States into documented and usable assets in the combat theater
- d. Reducing the order and shipping time with a concomitant increase in the reliability of theater projections of requirements and reduction in operating and safety stockage levels.

Four categories of supply—ammunition, construction supplies, food, and military exchange supplies—all consumed in the theater, accounted for at least 70 percent of the dry cargo shipped to Vietnam. Most items in these categories should be moved by surface in containers.

4. **Air Transportation.** Airlift capacity increased substantially during the Vietnam era, and introduction of the C-5 aircraft has further enhanced the capability of this premium method of transportation. Only about 10 percent of the resupply tonnages required to support a conflict of the proportions of that in SE Asia are within near-term increased airlift capability. Nevertheless,

the proportionate increase is so significant that it warrants serious review of service concepts for utilization of airlift to maximize the substitution of air capability for in-country logistical resources.

5. Common Supply. When properly planned, tailored to a selective list of high-demand items used by two or more Services, and following jointly agreed upon supply and funding procedures, common supply overseas offers opportunities to improve the management of inventories and to reduce the depth of stocks and storage requirements. When applied overseas, common supply should be implemented using the criteria recommended by the Joint Logistics Review Board and with full appreciation of the impact on the formalized procedures of the Services for supplying combat units with essential items.

6. Range of Stocks

a. Paramount among additional possibilities for minimizing logistical workload in the combat area is reduction in the range and depth of items stocked in overseas areas. Stockage concepts in overseas areas permitted the shipment of wide ranges of line items to satisfy even highly infrequent demands. These concepts, combined with inadequate control of shipments, especially in the early stages of buildup, overwhelmed the limited capability of personnel in-theater to receive, document, store, and manage the supplies received. The wide ranges of line items reduced the ability of the personnel available in-country to find and supply essential high-demand items whose need was reasonably predictable. The Services should tailor stock lists of initial shipments of supplies to include only those items essential to combat operations. The lists can be expanded during the buildup as required, providing the larger range in items of supply is within the capability of in-country units to receive and manage.

b. In the fall of 1966, the Army's stockage list in Vietnam contained almost 200,000 line items. With limited resources effective management of a stockage list of this size is nearly impossible. A large stockage list generates a requirement for extensive data processing capability creates a huge workload in handling changes, and eventually causes an inaccurate data base because of the difficulty in identifying supplies and in keeping accurate locator records. The end result is to saturate the overseas supply system so that even high-demand items cannot be managed effectively.

c. A 200,000 line stockage list is too high. This has been attested to by the fact that the list has been progressively reduced, with a target now of about 75,000 line items. Impetus to this reduction was accelerated by a 1st Logistical Command Summary noting that 5,000 line items on the theater authorized stockage list (TASL) accommodated 50 percent of the annual demands. These statistics provide an indication of how to improve logistic management without impairing operational capability. The range of stocks carried in the theater can be reduced substantially without jeopardizing operational effectiveness. The range of demand-supported consumables can be reduced substantially by establishing stringent addition-retention criteria. Furthermore, the criteria should be particularly restrictive during the early stages of a contingency, when facilities and personnel are marginal at best. The JLRB developed several specific recommendations for implementing this principle. Reduction in the stockage list will involve increased reliance upon air transportation to move many infrequently demanded items in addition to the high-cost and high-priority items now selected for airlift.

7. Maintenance

a. Maintenance workloads in the combat area can also be reduced. The Service concepts that have been in effect for maximum forward maintenance have contributed to increased stockage lists of spare parts and test equipment. These concepts have also placed a demand for construction of facilities to provide for maintenance activities and for the storage of repair parts. Particularly in the early stages of the conflict, maximum use should be made in the forward areas of a remove-and-replace maintenance concept with a retrograde of reparable. Clearly, some maintenance will have to be performed in the forward areas and some repair facilities will have to be provided. Decisions made by the Services in advance of contingencies, on an item-by-item basis as to where repair will be performed, will contribute to reducing to the minimum resources required in the forward areas.

b. The Services are moving toward some adjustment of the "maintenance as far forward as possible" concept, but intensified effort should be directed in this area. Although full benefits must await the completion of long-range projects related to design of equipment, important advantages can still be realized by minimizing in-theater maintenance with maximum reliance on component replacement in-theater and component overhaul in CONUS or in some intermediate location between the theater and CONUS.

8. Reparables. Most of the more costly elements of the supply inventory are reparable and they also normally require a long lead time for procurement. It is vital that reparable be tightly managed to ensure repair and return to the serviceable inventory. Techniques developed and refined during the Vietnam era, combined with utilization of air transportation where appropriate, permit the close management of reparable and responsive support to theater requirements without extensive overhaul operation in the vicinity of combat operations. Although the Air Force probably performed more maintenance at the intermediate level than should normally be performed in contingency operations, it developed excellent procedures for the control of reparable. These procedures should be examined by the other Services. The techniques need to be further developed or refined by all Services in peacetime in order to be available for use by deployed forces.

9. Spare Parts. The range and depth of spare parts can be reduced by the use of management systems that provide timely visibility of the quantity, location, and condition of spares at the responsible levels. Detailed asset information enables decisions on a current basis, with quick and precise response to problems, and facilitates performance of the same job with a smaller overall inventory.

10. Direct Requisitioning. Direct requisitioning on the CONUS wholesale supply systems and delivery directly to the user can eliminate intermediate stock points and reduce the cost of facilities, personnel, and equipment to operate these points.

11. Uniform Procedures and Programs. The application of worldwide uniform procedures and programs within each Service can reduce interface problems between CONUS and overseas and permit personnel to be immediately effective without further training upon transfer to an overseas location. Further, military logistic systems and procedures used in peacetime should be designed and predicated on meeting the urgent and essential demands of contingency operations. Military logistic organizations, systems, and procedures must be capable of adapting to a rapid transition from peacetime operations to contingency operations in an effective and efficient manner with a minimum of change and disruption to logistic support on a worldwide basis.

12. Summary. The foregoing emphasis on prefabricated structures, containerization, airlift, common supply, range of in-theater stocks, maintenance policies, control of reparable, direct requisitioning, and standardization of procedures supports the philosophy: "Minimize the requirement for logistic resources in the area of conflict."

13. The Board has made the following recommendations:

The major Board recommendations on reducing the requirement for logistic resources in the combat area, in addition to those on prefabricated structures, containerization, airlift, and common supply, are as follows:

(SM-21) All Services reduce the stockage of demand supported consumable items of materiel, including repair parts, in forward operating locations to a range of items in accordance with the following:

(a) Each Service should establish stringent targets of a specific number of frequencies of demand for an item to qualify for initial stockage and retention. The targets will vary by Service, activity, type of materiel and combat environment.

(b) During the early stages of a contingency when facilities and personnel are at best marginal, the criteria for stockage should be particularly stringent and could then be relaxed to the extent that economy and capacity to handle materiel and data warrant.

(c) Special stockage criteria will be required for special categories of materiel, such as shelf-life items, high-value items, seasonal items, planned program items, and items with special storage requirements.

(d) Initial stockage of items newly introduced into the Services' supply systems should be added to the overseas supply point's stock list only if their anticipated usage meets the criterion for initial stockage as specified above.

(e) Items not meeting the prescribed retention criterion will be reported promptly to the applicable inventory manager in accordance with Service procedures.

(MT-17) Each Service develop and refine reparable control systems for selected components which will:

(a) Ensure that, from the time of removal from a major end item, the location and status of each component is known at the proper management levels until it is repaired and returned to service or condemned and dropped for disposal.

(b) Make appropriate use of air transportation for movement of reparables.

(MT-7) The Services, in order to maintain operational effectiveness but reduce to the maximum extent possible the requirement for personnel, skills, equipment, facilities, and supplies in forward operating locations and bases, review on an item-by-item basis their decisions on where and at what level an item should be repaired.

(SM-28) All Services restrict the stockage of nondemand-supported, insurance, and mission-essential items of materiel in forward operating locations with reliance on air transportation to respond to overseas requirements for these types of materiel.

(SM-17) The procedures and techniques developed by the Services for providing push packages, or modified versions thereof, be made a part of established policies and procedures and provide that computation of requirements be equipment oriented rather than force oriented, the supplies be containerized and prebinned to the extent practicable, and the range be limited to high-demand items and essential items for selected critical systems.

(SM-27) The Office of the Secretary of Defense revise the Uniform Materiel Movement and Issue Priority System (UMMIPS) to extend the criteria for air transportation to permit the Services, in accordance with criteria that they establish, to code for air transportation those requisitions for selected items of Class VIII medical supplies and Class IX repair parts not normally stocked overseas. Such coding should be permitted on a routine basis without being subject to challenge except for apparent excess quantities.

(SM-29) The Services, with due regard for the total costs involved, place increased dependence on air transportation for the movement of infrequently demanded items of materiel in addition to considering air as the normal means of transporting selected commodities such as high-dollar and reparable items of materiel.

(SM-30) Increased dependence on air transportation for the movement of materiel be accompanied by concurrent reductions in the requirements for logistic resources in overseas areas.

PART III

SUMMARY

1. **General.** The opportunities for improvement in logistic operations are great and some should be exploited aggressively to achieve early and high rewards. Other improvements must be approached from an evolutionary rather than a revolutionary point of view, with concepts fully tested before they are widely applied. At the risk of being labeled parochial—and assuredly the Board has made every effort not to be—the Board must reaffirm the inherent strengths of the Service and Departmental organizations. The development of logistic capabilities to meet the needs of the operating forces in SE Asia stemmed in large measure from established organizational and operational strengths in the logistic systems of the military departments and services. In taking actions to improve readiness, performance, and efficiency in functional areas of logistics, care must be taken to preserve and enhance these basic strengths. At the same time, the expanding role of the unified commanders in logistic matters became apparent—and this fact, too, must be recognized and provided for in the future.

2. Logistic Management

a. History suggests that, in major logistic operations like those in Vietnam, Korea, and World War II, several management problems will always occur during the initial stages of a conflict. Among these recurring problems are the following:

(1) Transportation capability will be a critical factor.

(2) Logistic capabilities in the theater will for some time be overtaxed and control must be established to regulate the flow of men and materials in accordance with priorities established by the commander.

(3) Construction of facilities will seriously lag behind requirements.

(4) Communications will not meet all requirements.

(5) Ammunition, POL, and food—bedrock essentials that are consumed in large quantities—will require special attention.

These known problems be anticipated before actual events compel their consideration.

b. In the logistic management process, prime responsibility is properly vested in each military department for the support of its own forces, and is essential to these forces wherever deployed. At the same time the operation interfaces in many areas common to two or more Services, e.g., transportation, communications, construction, and common supply, will require adjustments through both departmental and unified command channels. Departmental and unified command reports and managerial data must be both consistent and compatible if prompt and reasonable decisions are to be reached at the appropriate level. Reasonable and prompt decisions also require complete, realistic, and, where necessary, coordinated planning that can be provided only by strong logistic organizations in the Services and strong logistic capabilities in joint staffs. Logistic responsibilities must be unambiguously defined in operation plans, and points of interface and of potential shortfalls among and between various elements must be clearly identified.

3. **Judgment and Tradeoff.** Military logistics is an extremely complex process, the management of which, like other military operations, involves both science and art. That is to say, the practice of military logistics requires adherence to fundamental rules while applying insight, analysis, and experienced judgment to the task at hand. The Board urges the exercise of judgment

and tradeoff analysis as logistic systems are refined to overcome present shortcomings and apply new technology. For example:

a. The Board endorses common supply, but believes that common supply should be applied only to those items where the effectiveness and cost advantages are indisputable. When applied to those items, most of the desired economies and efficiencies possible through common supply will be attained. Common supply is clearly no panacea for all the problems of logistics, and pressuring for its extension into areas where benefits are marginal or disputed detracts from achieving other improvements in logistics by diverting limited management capability from more productive areas such as containerization and other concepts for reducing the logistic workload in the area of combat.

b. Logistic systems generate conflicting and ever-changing requirements that must be satisfied. The systems must not be so rigid as to inhibit that echeloning of decisionmaking so essential to efficient management of a dynamic situation. A danger lies in standardization, uniformity, and centralization being considered as ends rather than as means to an end, as, for example, when adapting logistic systems to utilize the benefits of automatic data processing in managing logistic operations. Standardization, uniformity, and centralization should be fully exploited but with a full realization of continuing differences in the roles, missions, and operations of the Services and the divergent environmental differences that inevitably occur.

4. Report Orientation. The JLRB Report is oriented to a broad audience; it addresses today's problems while documenting historical facts, observations, and findings of lasting value. In the findings of Volume I, the Board strived to articulate basic principles of logistics that, although derived from experience in Vietnam, will be relevant through the foreseeable future. Thus, this report is addressed to logisticians at all levels. The lessons learned point to strengths and weaknesses that should be reviewed by students of logistics now as well as in future years. The recommendations address today's problems and are largely oriented to the logistic and operational decisionmakers of today.

5. Key Recommendations. The Board's report contains 265 recommendations. They are not readily summarized. Although significant and many relate to ongoing Service studies or corrective actions, several deserve special mention because of their overriding importance or because they represent significant innovations. These key recommendations fall in the following areas:

a. Improvements in Logistic Planning. Recognizing that Joint Chiefs of Staff and unified command contingency planning is undergoing constructive changes at present, the Board focused primarily upon the necessity for planning to develop credible materiel requirements for critical war reserve stocks and to ensure that manageable logistic operations are dependent on anticipating age-old problems like movement control and providing the required organizations, systems, and procedures at an early date.

b. Exploitation of Containerization. The Board has identified containerization as an area where major logistic systems improvements in economy, effectiveness, and responsiveness are on the immediate horizon. Bold exploitation of containerization as an advance in movement and supply technology will materially speed and simplify support of combat forces and is essential to enhance future operations.

c. Reduction of Logistic Workload in the Combat Area. Recognizing that the military operations will generally be conducted in unsophisticated environs with marginal logistic capabilities, the Board has developed a hard case for marked reductions of logistic resources committed to future combat areas. In addition to exploiting containerization, the logistic workload in the theater can be simplified by:

(1) Reducing the range and depth of materiel inventories echeloned into the combat area.

(2) Endorsing existing Service reappraisals of maintenance policy giving strong consideration to doing as much maintenance as far to the rear as possible without compromising responsive support to combat units.

(3) Supporting stringent disciplined approaches to improved management of repairable programs by the Services.

(4) Capitalizing on expanded airlift capability to replace overseas inventory with airlifted response including low-demand items and using retrograde airlift to support pulling maintenance out of the combat area.

(5) Increasing development effort on prefabricated functional components.

6. Applicability of Lessons Learned. Before concluding this summary, it is appropriate to address again the application of lessons learned in Vietnam to the many possible situations that may develop in the future. It is certain that some future emergencies will develop logistic problems that did not surface in the Vietnam era. On the other hand, each of the Board's findings and many of its recommendations are related to basic principles of logistics and management. An intensity of warfare higher than that in Vietnam will accentuate the need to adhere to these fundamentals. The details of some of the recommendations may alter with new techniques and capabilities, but the underlying principles are enduring.

7. Implementation. The Board is convinced that the recommendations of this report, aggressively and objectively pursued, will greatly improve the efficiency and economy of future logistic operations.

FACSIMILE

THE DEPUTY SECRETARY OF DEFENSE
Washington, D. C. 20301

FEB 17 1969

MEMORANDUM FOR Secretaries of the Military Departments
Chairman of the Joint Chiefs of Staff
Director of Defense Research and Engineering
Assistant Secretaries of Defense
Assistants to the Secretary of Defense
Directors of the Defense Agencies

SUBJECT: Joint Logistic Review Board (JLRB)

A Joint Logistic Review Board (JLRB) is established effective 1 March 1969. In accordance with the attached Terms of Reference, the Board will review worldwide logistic support to U. S. combat forces during the Vietnam era so as to identify strengths and weaknesses and make appropriate recommendations for improvement.

The Board will consist of Chairman, General Frank S. Besson, Jr., USA, and a senior general/flag officer representing each Service, a senior general/flag officer from the Defense Supply Agency, plus appropriate representation from the Joint Staff. The Secretaries of the military departments, the Chairman, Joint Chiefs of Staff, and the Director, Defense Supply Agency are requested to provide me the name of their representative on the Board by 24 February 1969. Board members will report to the Chairman, JLRB, for duty on 3 March 1969.

To assist the Secretary of Defense and the Chairman, Joint Chiefs of Staff in overseeing the work of the Board, a Logistic Review Advisory Committee is hereby established to be chaired by the Deputy Secretary of Defense or his designee, with the following members:

Assistant Secretary of Defense (Administration)
Assistant Secretary of Defense (Comptroller)
Assistant Secretary of Defense (Installations and Logistics)
Assistant Secretary of Defense (Systems Analysis)
Assistant Secretaries of the Military Departments for Installations and Logistics
Deputy Chief of Staff for Logistics, USA
Deputy Chief of Naval Operations (Logistics)
Deputy Chief of Staff, Systems and Logistics, USAF
Assistant Chief of Staff G-4, USMC
Director for Logistics, Joint Staff
Special Assistant for Strategic Mobility, Joint Staff
Director, Defense Supply Agency
Commanders of the Army Materiel Command, Naval Material Command, Air Force Logistics Command and Air Force Systems Command

The Advisory Committee will be called to session by the Deputy Secretary of Defense as required during the course of this review.

Administrative procedures will be as follows:

- a. The Chairman of the JLRB will report directly to the Secretary of Defense and the Chairman, Joint Chiefs of Staff.
- b. The Board, as its first order of business, will prepare a detailed study plan. This plan (to include objectives, organization, procedures, the detailed studies to be made, a schedule for completion, personnel requirements and funding support) will be submitted by 1 April 1969 to the Chairman, Joint Chiefs of Staff and to me for approval.

VOLUME I

c. Staff and administrative support to the Board will be arranged by the Assistant Secretary of Defense (Administration) based upon the approved plan. Action addressees will furnish such personnel and other assistance as may be requested by the Assistant Secretary of Defense (Administration) for this purpose.

d. The Board is authorized to deal directly with the components of the military departments and defense agencies concerned, and with the unified and specified commands concerned for the purpose of obtaining necessary data and information.

e. The Board will submit its findings and recommendations to the Secretary of Defense and the Chairman, Joint Chiefs of Staff by 1 March 1970. Periodic progress reports are desired and will be provided for in the study plan. Separable elements of the final report will be submitted to the Logistic Review Advisory Committee for review and comment as they are completed.

f. The Board will be dissolved upon completion of the final report or as otherwise determined by the Secretary of Defense.

The views and recommendations of the Secretaries of the military departments, the Joint Chiefs of Staff, and the heads of other appropriate DoD components will be solicited and considered by the Secretary of Defense prior to implementation of the Board's recommendations.

/s/
David Packard

FACSIMILE

TERMS OF REFERENCE

JOINT LOGISTIC REVIEW BOARD (JLRB)

1. The JLRB will review worldwide logistic support of the U.S. ground, naval, and air forces during the "Vietnam era" (August 1, 1965 to date) to identify strengths and weaknesses of "logistic systems" (i.e., policies, procedures, organization, manpower, and controls) so as to make appropriate recommendations for changes that will improve the overall effectiveness of these systems. The Board will examine the U.S. military logistic posture at the commencement of the Vietnam build-up, and the factors that affected (1) the responsiveness of logistic support to U.S. combat forces in Vietnam, and (2) their impact on readiness in other areas of the world. Emphasis will be given to the effectiveness and economy of current and planned logistic systems under combat conditions; and the quick reaction capabilities of these systems to meet changing situations and emergencies worldwide. The Board will identify logistic lessons learned, including those of a planning nature, which may have a significant effect on readiness for and support of future combat operations.

2. The Board's review will include a comparative evaluation of the overall logistic systems of the Army, Navy, Air Force, and Marine Corps--and the support provided to these systems by the Defense Supply Agency, the General Services Administration, and various cross-servicing and single service support arrangements. Recommendations for improvement will be made, as appropriate.

3. The Board will have broad authority to determine the areas and depths of its review, but particular attention will be directed to the following functional areas:

- a. Requirements forecasting.
- b. War reserve stocks.
- c. Procurement and production.
- d. Supply management--including in-country supply organizations and stock levels; stove-pipe systems; and automatic data processing.
- e. Communications, as it impacts on logistics.
- f. Transportation, to include airlift, sealift, containerization, military terminals, documentation, movement control and priorities.
- g. Maintenance support to include in-country, offshore, and CONUS.
- h. Construction.
- i. In-theater contractual support.
- j. Financial controls.
- k. Logistical personnel, including TDY civil service support, training of military personnel, and contractor technical personnel.
- l. Identification, processing, and disposition of excess and surplus stocks.

4. In-depth studies will be conducted, as appropriate, for specialized items of supply such as ammunition, petroleum, and construction materials.

5. The Board during its tenure shall keep informed on the status of T-Day and roll-up planning in order to assess the effectiveness, completeness, and coordination of such planning.

6. The Board will take cognizance of whatever completed and on-going studies are available and will not restudy areas which have already received adequate coverage.